THE BULLETIN

Vol. VIII. No. 3

Hydro-Electric Power Commission of Ontario

May-June 1921

Upper portion of High Falls. Mississippi River

THE BULLETIN

PUBLISHED MONTHLY BY THE

Hydro-Electric Power Commission of Ontario

ADMINISTRATION BUILDING
190 UNIVERSITY AVE.
TORONTO

SUBSCRIPTION PRICE:
TWO DOLLARS PER YEAR

CONTENTS

VOL. VIII. No. 3
MAY-JUNE, 1921

Association of Municipal Electrical Utilities.

Minutes of Convention at the Clifton, Niagara Falls, Ont., June 23, 24 and 25, 1921

THURSDAY, JUNE 23rd.

The Convention was called to order by the President, at 2.45 p.m.

Moved by Mr. J. E. B. Phelps,

Seconded by Mr. H. O. Fisk.

That the minutes of the last regular meeting and of the executive meeting be adopted as printed in THE BULLETIN. *Carried.*

The President then introduced His Worship, Mayor Stephens, of Niagara Falls, Ontario, who gave an address of welcome to the delegates, which was received with hearty applause.

The President outlined briefly the programme of the Convention.

The report of the Secretary showed an increase in membership from 110 utilities and 36 commercial members in 1920 to 126 utilities and 39 commercial members, for 1921.

Moved by Mr. A. T. Hicks,

Seconded by Mr. E. J. Stapleton.

That the report of the Secretary be received and adopted. *Carried.*

The Treasurer reported a balance of cash in the bank of $1,621.50.

A letter from the Chief Engineer of the Hydro-Electric Power Commission of Ontario was read. This letter asked for representation by the Association on the Committee on Rules and Regulations (Inside Work) of the Commission.

Moved by Mr. O. H. Scott,

Seconded by Mr. J. J. Heeg.

That the Chairman of the Regulations and Standards Committee of this Association be its representative on the Rules and Regulations Committee of the Hydro-Electric Power Commission of Ontario. *Carried.*

The President brought up the question of having this Association represented on a central committee to deal with the question of the safeguarding of electrical appliances.

Moved by Mr. J. E. B. Phelps,

Seconded by Mr. E. V. Buchanan.

That the matter of appointing a representative from this Association on a central committee on the safeguarding of electrical appliances be referred to the Executive for action. *Carried.*

Moved by Mr. O. H. Scott,

Seconded by Mr. R. Elliott.

That the amendments to the Constitution and By-laws be considered as a whole and not separately, and also that they be adopted. *Carried.*

The amendments are as follows:—

AMENDMENTS TO CONSTITUTION AND BY-LAWS.

Clause 4 (c)—Delete "Chairmanship of Standing Committees" and insert "Board of Directors."

Clause 5 (a)—Change this clause to read, "The officers of the Association shall be President, Vice-President, Secretary, Treasurer and Board of Directors. They shall each. . ."

(b)—Delete present Clause 5 (b) and insert the following:

"The Board of Directors shall consist of eight members, three from the membership at large and one from each of the following districts:

Niagara District,
Georgian Bay District,
Central District,
Northern District.
Eastern District."

(c)—Insert a new Clause 5 (c) as follows:

"The Directors representing the five districts shall constitute the Membership and Credentials Committee."

Clause 7 (a)—Insert:

5. "Committee on Accident Prevention and Health Promotion."

(b)—Change Clause 7 (b) to read:

"Each Committee shall consist of a Chairman with at least two other committee members, and shall be appointed by the Executive, the Chairman of each Committee being selected from the Board of Directors."

(c)—Delete the present Clause 7 (c) and insert the following:

"The Officers together with the Past President, shall constitute the Executive Committee."

Clause 8—Elections—Delete Clauses (a), (b), (c) and (d) and insert the following:

"(a) The officers entitled to election shall be nominated prior to the annual meeting, and shall be elected at the annual meeting."

"(b) The nominations shall be made by means of a Primary Ballot on which each Class 'A' member must designate his choice for President, Vice-President, Secretary, Treasurer, three Directors from the membership at large, and one Director for his own district. In case a member is nominated for more than one office, he should be considered as having been nominated for the office for which he received the greater number of votes."

"(c) The two for President, Vice-President, Secretary and Treasurer, the six for Directors from the membership at large and the two for Directors in each district receiving the highest number of votes in the primary shall be placed in nomination on the Election Ballot."

"(d) The President shall select two scrutineers, at least one of them being a Class 'A' member to count the Primary Ballots and also the Election Ballots."

Clause 9 (c)—Insert the words "Executive of the" before the word "Association" in the fourth line and change the word "the" in the next line to "its."

A series of short addresses on commercial subjects were given next, being taken by the following:—

(a) "Advertising" by L. J. Cunniff, H. K. McCann Co., Ltd., Toronto.

(b) "Window Dressing" by A. S. Edgar, Manager, Supply Department, Canadian General Electric Co., Ltd., Toronto.

(c) "Sales Campaigns" by E. H. Porte, General Manager, Renfrew Electric Products, Limited, Renfrew.

(d) "Service in Merchandising" by G. W. Blay, Manager, Appliance Department, Public Utilities Commission, London.

Discussion following these addresses was taken part in by H. F. Shearer, O. M. Perry, E. V. Buchanan, J. E. B.

Phelps, C. A. Walters, E. J. Stapleton, A. Pritzker, Mayor Holden (Collingwood), A. W. J. Stewart, O. H. Scott, A. T. Hicks, I. Pritchard, W. S. West, A. B. Scott, L. J. Cunniff, G. W. Blay and A. S. Edgar.

Moved by Mr. O. M. Perry,

Seconded by Mr. R. H. Martindale.

That a hearty vote of thanks be extended to Mr. Cunniff, Mr. Edgar, Mr. Porte and Mr. Blay for their very excellent addresses. *Carried.*—

The meeting then adjourned.

EVENING.

The delegates met at 7 o'clock for the Convention Dinner in the dining room of the hotel. Short addresses were given by Mayor Stephens, E. J. Stapleton, Sam Foster (Detroit), Geo. D. Leacock and others.

At 8.30 the delegates and their friends returned to the Convention room which had in the meantime been re-arranged to permit the pursuit of games of chance, Mr. Geo. D. Leacock being the most efficient organizer and ideal master of ceremonies. Large sums of fictitious money were won and lost, but the proper spirit prevailed and every one had a riotous evening.

FRIDAY, JUNE 24TH.

The second session of the convention was called to order at 10 a.m., the Vice-President being in the chair.

Mr. Wills Maclachlan showed a film entitled "Resuscitation," illustrating the application of the prone pressure method.

Mr. J. W. Purcell, Farms Engineer, Hydro-Electric Power Commission of Ontario addressed the convention on "Power Supply in Rural Communities." His address was illustrated with lantern slides and moving pictures. Discussion following Mr. Purcell's talk was postponed until the afternoon session, when the following spoke:—

MESSRS. H. D. ROTHWELL,
J. E. SKIDMORE.
C. E. KIRKLEY,
W. K. SANDERSON,
C. A. WALTERS,
H. F. SHEARER,
J. W. PURCELL,
THE PRESIDENT.

Moved by Mr. M. J. McHenry,

Seconded by Mr. R. H. Starr.

That the Association extend to Mr. Purcell and also Mr. Eisenhoefer, Mr. Flannery and Mr. Parker, who assisted Mr. Purcell, its appreciation for the very instructive talk, slides and pictures which were presented. *Carried.*

Moved by Mr. O. H. Scott,

Seconded by Mr. H. F. Shearer.

That a hearty vote of thanks be extended to Mr. Geo. D. Leacock, and to those who assisted him for the very delightful time given everyone at the Monte Carlo games on the previous evening. Also to the commercial members who contributed the prizes. *Carried.*

The session then adjourned.

The third session was called to order at 3 p.m. by the President.

After the discussion on Mr. Purcell's address of that morning, Mr. W. C. Cale, Assistant Laboratory Engineer, Hydro-Electric Power Commission of Ontario, read a paper entitled "Safeguarding the Users of Electrical Appliances." Discussion

following this paper was by Messrs. H. O. Fisk, H. F. Shearer, W. E. Swartz, A. T. Hicks, W. R. Ostrom, Wills Maclachlan, H. C. Don Carlos, C. E. Kirkley, R. H. Martindale and W. C. Cale.

Moved by Mr. R. H. Martindale,

Seconded by Mr. Wills Maclachlan.

That a hearty vote of thanks be extended to Mr. Cale for the splendid discussion given of the question and the large amount of information. *Carried.*

Moved by Mr. H. F. Shearer,

Seconded by Mr. A. T. Hicks.

That this Association approves of the legislation presented at the recent session of the Ontario Legislature by Mr. Swayze, providing that only those having proper qualifications be permitted to make electrical installations and that the Executive of this Association be instructed to take the steps necessary to promote the passing of these regulations at the earliest possible date.

Amendment, moved by Mr. O. H. Scott,

Seconded by Mr. C. E. Kirkley.

That the matter referred to in Mr. Shearer's motion be referred to the Executive. *Carried.*

A telegram from Mr. J. D. Peters, Electrical Superintendent, Moose Jaw, was read. It asked that this Association consider changing itself from a Provincial to a Dominion organization. This was referred to the Executive for consideration.

The Convention closed at 4.45 p.m. after which the delegates met in the park for a baseball game. An Association dance was held in the evening when a very enjoyable time was spent.

SATURDAY, JUNE 25TH.

At 9 a.m. the delegates boarded special cars which carried them to the forebay of the Queenston-Chippawa Development. Here they became the guests of the Hydro-Electric Power Commission of Ontario, and were shown over the whole of this great work.

The register shows another high record for attendance, there being the following:—

Class "A"	104
Class "B"	49
Commercial	103
Associates	36
Guests	26
Total	318

The exhibit by the commercial members was also most successful, 33 members having taken advantage of this portion of the Convention.

The attendance at the Convention dinner was 239.

REPORT OF SECRETARY

June 23, 1921.

Conditions regarding membership continue to be quite satisfactory, there being a further increase for this year.

There were 110 member utilities in 1920. Of these 12 have neglected to pay their dues and have consequently been dropped from our lists. They are as follows:—

Athens, Ayr, Orono, Newcastle, Brockville, Etobicoke Twp., Listowel, Merritton, Niagara-on-the-Lake, Nipissing, Picton and Simcoe.

The following 28 new member utilities have been signed up:—

Alexandria, Barrie, Bloomfield, Bothwell, Cannington, Caledonia,

Delaware, Elora, Gravenhurst, Hagersville, Kincardine, Lucan, Milton, Mitchell, Mount Forest, Paris, Perth, Port Arthur, Scarborough Twp., St. Jacobs, Stamford Twp., Stayner, Tara, Thamesford, Thorold, Wallaceburg, Watford and Wellesley.

This gives a net increase in the number of member utilities of 16, making a total for 1921 of 126.

There were 36 Commercial Members during 1920. Of these two have not paid their dues for 1921, viz., O. H. Pierce and Rogers Electric Co. New Commercial Members are as follows:—

The Coffield Washer Co. of Canada, Limited; Easy Washing Machine Co.; Electric Refrigerators, Limited; Gillespie—Eden Corporation, Limited; The Robbins & Myers Co. of Canada, Limited.

There is therefore an increase in the Commercial Membership of three, making the total for 1921, 39.

Membership tickets for this year have been issued as follows:—

Class "A"	179
Class "B"	187
Commercial	122
Associate	59
Total	547

ADVERTISING.

By L. J. CUNNIFF,

Vice-President, H. K. McCann Co, Ltd., Toronto.

GENTLEMEN, I don't think my general ability or my powers of oratory entitle me to this privilege. Nevertheless I am delighted to be here. I am delighted to talk to you because those of you whom I met before and those of you whom I have met to-day are good fellows, and I can tell by looking at the rest of you that you are good fellows too. But there is another reason. As his Worship the Mayor said, in his address of welcome, you gentlemen are doing one of the most important works that is being performed in the Province of Ontario. I believe you are doing more than any other association or group of individuals in Ontario to make Ontario a prosperous province and better place to live. You are taking the drudgery away from the home and you are making Ontario homes happier and more comfortable. No one could do a more important work.

The work is not just starting, a tremendous advance has already been made. Ontario's waterpowers and her waterpower developments are second to none in the world; the various lines of electrical merchandise being manufactured and being put in Ontario's homes are equal to and probably surpass those that are found in any other section, I don't care where you go. You have also done a lot to get people to use this electrical equipment. You

have made big advances in the educational work necessary to get people to use these things. But if there is a weakness any place in the scheme of things I think it is right there. Gentlemen, I think we should have done more and we can do more to get more people to use more electrical power to better advantage. I think if we must emphasize anything it must be that branch of our work.

It is quite fitting that advertising should be discussed before a group of men interested in electrical merchandise and electricity generally, because advertising and electricity are very much alike. Both in a way are rather intangible things, rather indefinite. I don't think we know all about electricity yet. We know if you put a dynamo on one end of a copper wire and an electric lamp on the other you are going to have light. We may not just know how electricity does it but the results are positive and tangible. The same thing applies to advertising. We may not just know how it works but we know enough about it to know we are going to get definite, tangible and beneficial results if it is done right.

In another respect advertising is like electricity. If a novice attempts to handle either, the results are just about sure to be the same. Take the man who knows nothing about electricity, if he attempts without competent engineering advice to monkey around with a lot of live wires he is very likely to get his fingers burned. Take the man that knows nothing about advertising and if he attempts to monkey around with an advertising appropriation he is very likely to get his fingers burned too.

Advertising is as old as Adam. Unnamed, probably unrecognized, it existed before Adam. The perfume of the flowers and the colors of the blossoms are Nature's way to advertise them and say, "Here is nectar." The bee comes to get it and turns it into honey. The bee that comes for the nectar scatters the pollen, thus carrying on the process of fertilization. The bee pays the advertising bill, and this, like all other advertising, pays a handsome profit.

Advertising is old; but, as we know it; it is comparatively new—newer than electricity; in fact, it is only a little more than a score of years old. Advertising as we know it now, consisting largely of printed messages, was first used to advertise the pill and the elephant. It was used by the patent medicine people and the circus people, but the word "Advertising" was used by these two people in the way of a fake. It didn't take Barnum very long, however, to find out that you couldn't make false claims in advertising and get away with it, that "You can fool all of the people part of the time, some of the people all of the time, but you can't fool all of the people all of the time." That was the first truism given relating to truth in advertising which is appreciated so much by all doing advertising now.

Advertising is like electricity in another way. It is doing a great deal to advance the cause of progress of civilization. Advertising has a tremendous influence on our daily lives, more than we have any idea of. What kind of garters do you wear? An advertised brand. What kind of hats do you wear? The chances are they are

advertised. Your shirts and your shoes too—and you smoke advertised cigarettes, if you smoke cigarettes. Advertising put bath tubs, brooms and tooth brushes in our homes and cereals on our breakfast table. Advertising made us a nation of readers and now it is making a nation of movie fans. Everywhere you go you see the things advertising is doing. The tremendous power of advertising has been demonstrated over and over again.

During the war the Victory Loan drives in Canada and the various Liberty Loan drives in the States were brought to a successful conclusion by the power of advertising. In England and France, advertising was used for the same purposes, also for the purpose of raising recruits for the army and for popularizing various governmental measures and policies. In the late Million Dollar Drive for the Muskoka Hospital, advertising was used in order that this might be brought to a successful conclusion. Talk to the men back of this million dollar drive and they will tell you that without advertising, they do not believe they could have made that million dollar drive a success, popular as the movement was.

It is said that the public is hard to deal with, that the average man is a rather hard-to-get-along-with fellow, somebody that you can't influence. This is all wrong. You can get the public to do anything which will benefit the public if you will ask them often enough by advertising. Someone has said, I think a poet, "Let me write the songs of a nation and I care not who commands the nation's armies." And, gentlemen, give me command of the nation's advertising and I don't care who runs the Parliament, or who is Premier, I can control that country. You can do anything by the power of advertising if you will do it properly, consistently and honestly.

Among the great things which advertising will do, the most important thing is to build good will. Good will is another thing we have been taught to believe is intangible, or hasn't very much real value. That is also wrong. The courts have ruled that good will does have a tangible value sometimes running into millions of dollars. Take the Star Salt trademark, one of the higher courts in the United States ruled that this Star Salt trademark was worth ten million dollars. Good will to a firm or to a brand of goods is just as important and just as valuable as a good name is to the individual. What does a name mean? What does it mean? What does the name of the individual or firm or trade name mean? Just what you make it stand for by talking about it, by advertising, by putting the intrinsic value back of it.

Many of you do not know about the new Hydro trademark. I may be pardoned if I mention that particularly. I had a little bit to do with the designing of it and I think it is a good trade mark. The Hydro Red Patch, the Honor Flag of Hydro service. I think it is a splendid idea. I think you will all agree with me, that trademark stands for superior merit and superior service in connection with everything electrical. But this trademark is not worth much, the design may be all right but its value is not great and it is not going to be great

until all of you fellows believe in it as much as you believe in your country's flag, until every employee of the Hydro Electric Power Commission of On- flag, until every employee of the Hydro Shops in Ontario here resent anything that reflects upon the Hydro Red Patch, just as much as they would resent anything that reflects on their country's flag. When that time comes we can make the people see that this trademark does stand for something tangible, we can build up its goodwill by advertising. So I would like to see it advertised, I would like to see it painted just as big as it can be on the front of every dealer's shop and on the front of every Hydro Shop selling Hydro goods until everybody in Ontario knows and believes just what this Hydro Red Patch stands for.

I am not going to talk to you very long, it is hot, but I do want to bring out a few points. When I received the invitation to talk to you gentlemen I looked over some of the advertising being done of electrical appliances in Ontario publications. Most of it is excellent. I need not tell you that, but there is just one thing I noticed which I would like to call to your attention. In some of the advertisements, unconsciously perhaps, the other fellow's goods is being knocked. An attempt is being made to belittle the other fellow's product. That is not effective, it is not necessary as you know. According to the figures published by the *Electrical News* of Toronto, 2 per cent. of Ontario's homes have electric ranges, 15 per cent. electric washing machines and 5 per cent. electric sewing machines. Suppose you are selling ranges, 2 per cent. of your prospects have been sold. There is still 98 per cent. to sell. If you talk entirely in your advertising or in your sales articles about how many mirrors or about the enamelling, or the size of the castors or the lids, or the hot point or what not, of the Eagle or Acme stove you are selling; if you talk entirely of the mechanical features—the special talking points of your own device—you are talking to a very small percentage, probably the 2 per cent. that have stoves, maybe yours, or maybe the other fellow's, 2 per cent. that are already educated on the range idea, that's how restricted your field is? Isn't it better to talk of the advantages of the Electric Range generally, the cool kitchen, easy work, and better cooking economy. If you do that aren't you talking to 94 or 95 per cent. of your prospects instead of just three or four?

I don't want to interfere with the speaker that is going to follow me on sales but I want to offer a suggestion in connection with the sales argument also. I have been told that salesmen do the same thing unconsciously. We should silence those salesmen as soon as we can—probably not silence them. I am reminded of a cartoon I saw in one of the Toronto papers, the Sunday edition, a week or so ago which showed a picture of a cat on the fence at midnight. On one side the owner of the cat had his head out of the window and on the other side the owner of the house disturbed by the cat had his head out of the window. The cat owner was saying, "What shall we do about it, brother? Kill the infernal thing?" The disturbed man replied. "What! Kill it and waste

all that energy? Not on your life. You get it tuned and send the bill to me." That is what we ought to do with the salesmen. Let us not silence them but let us see if we can't all get in tune so that we can all do harmonious promotion work in the interests of electricity generally together.

There is plenty of room in Ontario for every honest electrical device, for every honest, earnest firm selling electrical utilities. The market is not scratched. When we boost electricity generally, when we talk Hydroized homes in Ontario, when we talk the wonders of electricity as the main thing and mention the special advantages of our various products or our line of products, incidentally we are going to see the sales of all lines of electrical merchandise in Ontario grow. Let us all boost electricity, let us not belittle the other fellow's product, but let us see if we can't get in tune and all work together in harmony.

Window Dressing

By A. S. EDGAR,

Manager, Supply Department, Canadian General Electric Company Ltd., Toronto.

WITHOUT the shadow of a doubt the most valuable part of a retail merchant's store, is his display windows. The percentage of sales made from the sidewalk is surprising.

We sometimes fail to realize, that many people never see any other part of our place of business but the outside. Many of them are possible customers. What kind of an impression are we giving these possible customers?

Many times business is attracted to a store, but the appearance of the windows, store front and goods displayed, fail to confirm, or bear out the favorable impression, that the other publicity has made.

An appeal to the eye is the most direct and effective method of arousing interest in merchandise. Practically every article, must first appeal to the eye. A good window display owes its effectiveness to this first principle of selling.

To display merchandise is not merely to scatter articles about in a half-hearted way, but to show them, as if you were talking to a customer. Merchandise displays, even of the plain everyday kind, demand thought, in order to get the right idea before the eye of the prospective buyer.

Often you pass windows, that though they have been changed the same day, look precisely the same as before. They soon cease to attract the eye. The sameness of display makes them dull and uninteresting.

Suppose John Smith, Electrical Dealer, dresses his windows on Mon-

day morning in the accepted fashion by filling it with a dozen different articles, ranging from fixtures to heating goods. The next Monday he enters the window, cleans the inside, and polishes the glass, and carefully puts back another general assortment of electrical goods, that have no relation to each other. The result is that, Mrs. Jones, who passes his store two or three times a week, probably notices that John Smith is an Electrical Dealer, but doesn't notice any change in his window displays, for the simple reason, that they are so much alike, that he might just as well have left it alone.

But, on the other hand, suppose that this week, John Smith, Electrical Dealer, dresses his windows with nothing but fans, and uses the display matter, the manufacturer is only too anxious to supply him with.

Now, when Mrs. Jones is going home, feeling "all in" from the heat, she passes John Smith's store, and cannot help, but carry a single idea away with her. Namely—that an electric fan will keep her kitchen or dining room cool. And, this thought will stay in her mind every time her family grumbles about the heat. She will instinctively think of John Smith's electrical store, when she thinks of fans. But, if the window display merely contained a fan among an assortment of a dozen or so other electrical articles, the chances are, that Mrs. Jones would never have noticed it.

The most effective window display is that which exhibits the single idea. It drives home a single thought, which not only attracts quickly, but is retained more easily. The spectator gets the single impression, and when he passes, a mental picture goes with him. A single impression is more easily made than a series of impressions. Furthermore, the point, I would like specially to emphasize, that with the single idea display, changes can be made more often with the contrast so strong, that the mere change itself, attracts attention.

All window displays should be changed often. They should never be allowed to get stale, and to this, the single idea adapts itself admirably. A dollar or two spent on display matter has been the means of turning a mediocre window into an attractive sales producer.

It's time well spent to figure out the cost of your windows per year. Do it. Charge up everything you can think of, and you will find, that you are spending on that valuable window space, considerably less than on a cheap clerk, and yet, a mere window can sell for you many times over what a clerk in your employ can turn in.

The display work in every retail store should be placed in charge of some one who has the aptitude for that kind of work. He should be allowed wide latitude to work out his ideas, and be given sufficient time to put in the displays during the daytime.

The small dealer, or a dealer in a small town is, of course, handicapped in making the best use of his windows, because he cannot afford to hire a regular display man. Any merchant can, however, have attractive displays, if he will allow one of his clerks to spend some time and a little money in making them. The time and thought

given to this work is much more important than the expenditure of money, as excellent settings can be made with very little cost.

It has been estimated that from thirty to fifty per cent. of store sales are made from the sidewalk through the medium of good window display, before the patron enters the store.

No merchandise lends itself better to attractive showing than electrical goods, but common sense must be used, in order to make your windows produce sales. For instance, the construction of the windows in a great many instances does not receive the care and forethought it deserves.

Far too large a percentage of windows are built with the background so low, that employees can look over at the people on the side-walk. This may seem a little thing, but it is of very great importance.

A lady steps in front of an electrical store to examine a washing machine, which is working away in the window. She glances up, and sees one or more people looking at it from the inside of the store, she naturally moves on, when she probably would have stayed a few minutes longer, and the good features of the washing machine would have had that much longer to make an impression on her mind.

Window backgrounds should not be transparent. They may be constructed of frosted glass, but this tends to distract by interior lighting showing through. Background serves to make a display stand out, and gives an opportunity to properly illuminate the window, because the full light effect can be concentrated on the good showing. There is no necessity to use mahogany or other expensive wood for the background. In many cases composition board will do very well.

The floor of the window is deserving of much thought and care, for it will do much to enhance or detract from the appearance of the merchandise shown. A polished hardwood floor is the best for all purposes. It's easy to keep clean and with care will look well for years.

In the rear portion of every window, electric base receptacles should be inserted in the floor to provide connections for the various appliances that are to be shown in operation.

Don't deceive yourselves by failing to realize the number of people who see your windows at night. During the day, the passerby may not have time to give your window more than a passing glance. At night, only the bright spots are of interest, and he has more time, and will study your display much more critically. People who the night before were window shopping, will often be found in the store the next morning, willing to talk business.

Very few display men realize what an important part color surface plays in window displays. Sometimes the window will appear bright, and the goods displayed are emphasized with excellent effect. While again, with the same number of lamps in use the entire display has a full, uninteresting tone.

This is due to the window finish, and the color of the goods on display. The following architect's table, which indicates percentage of light

reflected by different color surfaces is interesting:—

Dark blue reflects 6½% of the light falling upon it.
Dark green about 10%.
Pale red, a little more than 16%.
Dark yellow, 20%.
Pale blue, 30%.
Pale yellow, 40%.
Pale green, 46½%.
Pale orange, 55%.
Pale white, 70%.

It requires higher intensity to light a window finished in dark wood, such as mahogany, than it does one finished in light oak. Articles, in which dark colors predominate require more light than those with a bright finish.

Some dealers have difficulty in preventing their show windows from sweating or frosting in cold weather. When this occurs the windows are rendered pracically useless for publicity purposes, at a time when they are of the most value.

The reason for this is an unequal temperature on opposite sides of the glass. Unless controlled the temperature of the show windows will be nearly that of the heated store, and therefore, much higher than the air outside the glass. Warm air carries a much greater portion of water than cold air. Therefore, when the temperature is much greater inside the windows than outside, the warm air comes in contact with the cold glass, and the moisture it carries will be deposited, and freeze to the inside surface of the glass. There will also, be a similar result on the outside of the glass, if the temperature inside the window is artificially lowered very many degrees below the warm temperature of the air outside. If they correspond within a few degrees there will be no sweating or frosting.

Many of the modern show window frames are constructed with a patent ventilating mechanism, that allows the circulation of the outside air to pass across the inner surface of the glass. This method is without question, the best ventilating system. In order to make this method effective, it is necessary for the window to be entirely shut off from the heat inside the store, and ventilated only from the outside.

In using this method, care should be taken, that the outside air is only admitted through a filter, something like fine cloth, or there will be constant annoyance from dust and dirt blowing in from the outside.

The object of displays in show windows is to create sales. It is not enough to interest people in the goods or appliances. Interest must be developed into the desire to buy, and the sale practically closed. The endeavor of the dealer in displaying merchandise should be to carry it through, with more than merely attracting favorable comment.

Descriptive show cards are the final finishing touch by which the window can be made to actually sell the goods. The salesman frequently needs only to take the money and wrap up the purchase. His show windows have made the sale. This cannot happen if descriptive cards are not used, and his customers' questions must otherwise be answered by the salesman. The card that tells the right story, and uses the right kind of selling talk is

like the right kind of salesman. All the good points that apply to good salesmanship apply to cards as well. Likewise all the bad ones. The right kind of window card is an indispensable help to any window display.

Cards telling of the various uses, and convenience of devices, and with the price plainly marked are sure to create sales. The first question which enters the minds of most people is—how much money does it cost?

If the price is not marked, the general inference is that the article is expensive—that the dealer is afraid to feature the price. This is particularly true with reference to electrical goods. The prevailing idea of many people generally is that anything electrical is high priced, and that it costs a lot of money to operate.

This idea can be overcome by a show card, telling purchase price and approximate cost of operating. Why should these facts be concealed? At some time during the sales, these matters must be brought up. And, if the person is informed before entering the store, the salesman can feel that he has a mighty live prospect, rather than one whose curiosity has been merely aroused.

A good window display is a silent salesman, which arrests attention, arouses the desire to buy, and brings customers into your stores.

Your windows can be made to pay your rent. They will, if you devote a little time and attention to them.

Sales Campaigns

By E. H. PORTE,

General Manager, Renfrew Electric Products, Ltd., Renfrew.

MR. CHAIRMAN and members of the Association, it is indeed a pleasure to be with you again to-day, particularly as it was my misfortune to miss last year's convention. Mr. Edgar who spoke just before me stated he didn't know why he had been selected to talk on window displays. I can assure you, gentlemen, my predicament is very much greater than his. It would take the finest sales campaign ever inaugurated to tell me why I should be asked to address you on sales campaigns. I can't imagine the reason.

I have not tried to write a speech; I don't even know how to talk distinctly. I have just made a few random notes about some of the little things on sales campaigns that have been picked up from time to time.

I think one of the first things that might be mentioned is the reason why sales campaigns are necessary to-day. A good many years ago the only products that were available on the market were those things essential to life and human existence, and as a result practically all trade was carried on by barter and exchange; one man went down and swapped a bag of potatoes for a bag of rice, and so on. The early pioneer inventors such as Westinghouse and Edison and dozens of

others gave us inventions which were the basic fundamental principles of our present manufacturing facilities. Some of those early inventions were the basic fundamentals of what is carried into being to-day by the Hydro, and to those men we are indebted for a number of the products on the market to-day. As those manufacturing facilities were developed, other inventive genius developed the products to make, and in a few years the number of products on the market developed and multiplied to such an extent that something had to be done to make the public absorb them. Many of those products filled wants which had not been created. The wants were there but the public didn't really know they needed those things. Advertising had to be called into play to tell the people what the product was, what it would do, where it was made and how much it was sold for, and as advertising developed and became more and more of a science the sales campaign became more effective in its application and produced results which were impossible in the early days.

Now there has been a great deal of literature published on sales campaigns, and a great deal of the literature published is very good, also it is highly technical from the selling standpoint; the necessity of analyzing markets and dealing with all this sort of thing has been gone into. You gentlemen have neither the facilities nor the time to go into an extensive analysis of that kind. I think the real essentials of any campaign can be boiled down into two things. First, have some definite offer to make to the people, and make sure that the offer you are going to make is something that will fill a genuine want. When you have the details worked out describe them in ordinary, plain English that the everyday man on the street can understand, and sell your offer to the public. That is all you have to do to make a successful sales campaign.

The question naturally arises—how am I going to sell my offer to the public? The first thing necessary to sell anything is to tell the people what it is, and the only way you can tell the public what you have is through the medium of advertising, because you can't possibly hire enough men to go around and tell everybody by word of mouth. So the medium of the local newspaper is to my mind the most effective medium you gentlemen have got to use in putting over a sales campaign to-day. It is the most neglected medium that there is in the whole Province of Ontario. You can take up issue after issue of our local newspapers in the Province of Ontario and you will find a few of the larger Hydro systems advertising in the paper, whereas what I think you ought to find is an ad in every issue of every local paper in every town where there is a Hydro system in Ontario. Think of the influence, gentlemen, that you would wield in a year or so. You always have something to sell; whether you have a sales campaign or not, you have a wonderful service to sell to the people of Ontario and the newspaper is the common place to tell them what it is and how you sell it.

Another very important thing in putting over the sales campaign is the necessity of good window display, and

as Mr. Edgar has pointed out, I think the proper window display is one idea at a time. A window is dressed for the purpose of bringing to the public's attention something that you want to tell them or sell them. Now if you can just get them to understand one thing at a time it is pretty good, so don't try too much. I think every window should have one concrete selling idea. It doesn't make any difference what the product is. One particular feature of the service you render can be picked out. Tell about it in your window and don't tell anything more except the price, which should always be in, because you are not catering to the millionaire class exclusively, and unless you are catering to them exclusively I consider the price should always be in the window. The whole story should be there, but don't fill up the window with a whole lot of products expecting to get any selling results. Another thing is that the window should be enclosed. If you want the public to come along at night and see what a beautiful store you have inside, leave your window display out and run your store floor right to the front. If you don't want to sell them anything close it in so that their attention cannot be distracted by some fine portable lamp in the corner of your store, when you want them to look at a range in the window.

Another important feature of the sales campaign is the fact that you can't be assured every one of your prospects is going to read the local paper on the particular day you advertise. You have a mailing list and you know that everything you mail out is going to reach the hands of the possible prospect, therefore by all means mail out folders and letters to them all and see that the idea of your sales campaign is clearly outlined in plain, simple English, and don't forget to tell the women what the things will do that you are selling. She is not interested in how, where or when it is made, all she is interested in is, what it is going to do for her. If you have a large town and can afford it, complete your whole sales campaign with salesmen calling on your customers, because in a great many instances the advertising, the window display or the circular letter, or the combination of all three will have almost sold the prospect, but it takes the efforts of a salesman to clinch the sale and get the money.

Now I don't think any town running a sales campaign should expect to get all they put into a campaign out as soon as it is closed, because you can't possibly change the buying habits of the public in a day or a week. It takes a long time to do it. You must remember that there are thousands of other people trying to sell goods at the same time you are, and the attention of your prospects is divided, and therefore you must not expect that all of your prospects are going to respond when the campaign is on, and that you will get some overflow results. I have a letter from a chap in Ontario here telling about a range campaign he ran recently and saying he had used considerable advertising space, had given an entire floor to display, including windows, had distributed pamphlets and circular letters, etc., and he had sold 156 ranges in one month. He says he thinks inter-

mittent campaigns are the most successful, and he goes on to say during the month of June, instead of advertising ranges, he has advertised wedding presents, but it would surprise you the number of ranges that are still being sold, showing results still overflowing from the campaign. That is the way that it always happens.

Mr. Cunniff has very able outlined to you many of the essential points of advertising. I would like to emphasize one thing he said and that is "don't let a novice handle your advertising appropriation." I agree with him absolutely, and I also think that in Hydro towns, in many cases, there is nobody on the staff who is an advertising expert. Another thing, if they were, they have too much to do to spend time on advertising, and I think the Hydro Systems in Ontario to-day are in need of a centralized advertising service so that one campaign can be run over the entire Province in one month, followed by another campaign next month on some other device. It might be carried out on the same basis as the National Electric Light Campaign, and I am sure it would produce results.

I am not talking to you to-day as a manufacturer, but since that is my business I would like to say one word before I close for the benefit of all manufacturers. A manufacturer's primary business is to manufacture goods. His function should theoretically cease when he produces the goods, and to get the goods into the consumer's hands should be the function of the distributor. It is necessary for him to carry on educational advertising in order to assist the distributor in selling his goods to the final consumer, but the point at which he should stop is rather clearly defined; but in the electrical appliance game in the last seven or eight years the contractor-dealers in the Province of Ontario and elsewhere have left the manufacturer to do all the work and have held back. The average dealer is perfectly willing to gather in the money if the manufacturer will go out and make the sale. He objects to high prices and cuts prices, thinking by cutting prices he can increase his sales. It is a bad policy from start to finish, and it can be demonstrated to you all over the Province, because any time a manufacturer, distributor or retailer cuts the price in order to produce a sale, you can always take him out on the side street in your home town and show him the goods in a second-hand store or hardware store at half his cut price. If price is relied on for the sale, customers are not going to go to him, they are going to go to the second-hand store on the side street. So on behalf of the manufacturer I urge upon you the necessity of running good sales campaigns to make the public absorb the devices offered to it. Remember last winter and the year before when power was short. It was very easy and probably essential to almost prohibit the use of devices, but I want to tell you gentlemen, that you can't stop advertising in any form or manner and then come along later and pick up your market where you left off. I believe to-day you gentlement should be prepared to spend six or seven times more money in advertising than you would have spent had the power shortage never developed.

Service in Merchandising

By G. W. BLAY,

Public Utilities Commission, London, Ontario.

SERVICE, although a small word has a very large meaning, which when properly used, guides the success of any retail business whether privately or publicly owned.

The reputation that any store receives is based on the kind of service rendered to the buying public, and as we all realize that "mouth to ear" advertising by satisfied users to prospective buyers yields the best results, it is desirable and necessary that, in order to make a success of any retail electric shop—particularly one publicly owned—a first-class reputation should be enjoyed, and this we have found can best be obtained through the sale of only first-class merchandise backed by real service.

Service can be rendered in many ways, but the most vital way in the electrical business is to keep the customer satisfied, and the appliance operating satisfactorily and continuously after the sale has been made. The smaller appliances can best be taken care of in the service department in connection with the Shop, and should not be taken from the building in which the Shop is located in order to be repaired. It is necessary to have all small repairs such as irons, toasters, cords, etc., in readiness for the customer within at least twenty-four hours after their having been brought in. This we have found can be done to best advantage by maintaining a department for this purpose, and in this department to employ only men who know their business as service men. When an appliance is brought into our Shop it is carefully tagged, and the stub of the tag given to the customer in order that there will be no confusion or doubt as to his receiving the same appliance as the one he brought in. These appliances are then taken to our Service Department which is in the same building as our Shop, and after being repaired are inspected by the man in charge of the service department, who is then held responsible for the durability of the repair. These repaired articles are returned to the Sales Department, where they are always available, thereby eliminating any waste of time on the part of the clerk or customer.

This system we have found to be entirely satisfactory and takes care of approximately 5,000 repairs yearly from our inside service department. A number of repair tags and service call slips as used in our service department are available for any one interested in this branch of the work.

Service calls of an outside nature are very important and require a great deal of attention. Most of these calls are urgent ones—washing machines generally require attention when the customer is in the midst of her work. For this branch of the service it is absolutely necessary that only conscientious, courteous, reliable men be employed who understand and always

maintain that necessary "At your service" attitude toward the public. It has been our experience that on this particular work men who are not tactful—in a great many cases—have a tendency to leave the customer with a doubt in her mind as to the quality and efficiency of the appliance which she has purchased. We carry in stock at all times a complete line of repairs for all appliances sold, which enables us to give the customer a quick, satisfactory service. We find it good business to carry spare motors for the various washing machines handled, as no customer should be kept waiting until the motor taken from her machine has been returned to the manufacturer for adjustment.

We have some 1,500 electric ranges connected on our lines, and find it advisable to keep men on this work alone, as the range is one appliance that must be kept in operation continuously and in order to keep the customer satisfied all stove repairs should be made within twenty-four hours after the call has been received. Men on this work when called into any locality should also examine any ranges in that immediate vicinity, and in this way often times save a second trip. This also impresses upon the customer that you are interested and desirous of giving him service at all times, even though you were not called to repair their particular range.

A great service can also be rendered at the time the sale is being made, for example—when selling an electric range if you are in a position to quote a price of say $150 for the range installed, you save the customer needless worry such as arranging for inside installation and change of outside service. All of these arrangements should be and can be taken care of by the Sales Department, with which the customer has now become familiar and to which he looks for all service in connection with the transaction.

We have a follow-up system which keeps us familiar with every range transaction from the time the range is sold until it has been installed in the home ready to operate. This system —which can be best handled by the telephone operator, due to her being in close touch with all departments—consists of a book, alphabetically arranged, giving customer's name and address, date of sale, date of installation, date of inspection, and date of change of outside service. An entry is made when the range is sold and this is followed daily until the work has been completed. Should there be any delay in any one of the departments involved it can be detected at once, for example—to demonstrate the service we are able to give with the above system, and also due to the co-operation which exists among our various departments—during the month of May we were successful in disposing of 156 electric ranges, nearly all of which were installed and in operation before the end of the first week in June.

We are so situated as to be able to do all plumbing and wiring in connection with electric water heaters and electric pumps, due to our association with the waterworks department. This service we find is greatly appreciated, as our men from experience understand this work, and are able to

make the installation complete, much to the satisfaction of the customer.

We all realize that it is essential to keep the customer's interests in mind at all times, in order to be assured of his continued patronage and good-will —without which it is impossible to make a success of any retail business. In our opinion, the slogan used by the Rotary Club is most appropriate for any retail electric shop, it being: "He profits most who serves best."

DISCUSSION FOLLOWING PAPERS BY MESSRS. CUNNIFF, EDGAR, PORTE AND BLAY

Mr. H. F. Shearer (Smith's Falls): Mr. Chairman, we are to be congratulated on the high tone of the papers we have listened to this afternoon. Both the first and third speakers touched on the point of advertising in connection with the general business and the other in connection with sales campaigns. There is another point I think we could carry that advertising along with, and that is a general information page in all our local papers. I think we could do more or at least a great deal by carrying along a sort of information bureau without making any special advertising campaign out of it. There are a great many people who will read a news item in regard to electrical equipment that will shun a direct advertisement. I believe, in the idea of a general advertising committee as suggested by Mr. Porte, or in an advertising campaign covering the whole of the Province. If that Committee could also utilize information at hand in the general reading matter and get our people to read this information, it will start the ball rolling and put the thought in their minds that they might make use of electrical appliances as well as those who are already interested and seeking further information.

Mr. O. M. Perry (Windsor): I would like to enquire from these gentlemen who spoke on advertising as to what would be a reasonable percentage of gross sales for any Hydro Shop to spend in advertising?

Mr. Cunniff: If I may be permitted to answer Mr. Perry's question, you can't give advice on advertising any more than you can on medicine. However, *Printers' Ink* did conduct quite an investigation to find out how much the retailer should spend and their committee reported all the way from four to six per cent. An interesting thing in connection with that report was that the fellow who spent four per cent. decided to raise it to five per cent. the next year. He only spent four per cent. because his sales went up. Then he decided to raise it to six per cent. and he only spent four per cent. because his sales went up. It is hard to tell what a reasonable percentage is, but it is worth while to spend a good percentage in advertising.

Mr. Perry: In the question of servicing, the point of expense comes in. There are two extremes, one, where

the service charge is made both for material and labor, and the other extreme where no charge is made for either. I have one concern in mind which is very liberal in that respect. We in Windsor have adopted a compromise and during the guarantee we give both material and labor free; after the guarantee has expired we make no charge for labor but we do charge for any materials. I would like to ask Mr. Blay about that.

Mr. Blay: In this connection we always look after any of our appliances and service them free of charge during the first six month, after which we charge for time and material on all appliances. We also have a charge for every repair that goes out of the department. We make no free repairs.

Mr. E. V. Buchanan (London): I would like to further emphasize a point. I do not believe in the method of free service. It is not accurate. The Hydro-Electric Power Commission frame their rates for power. They say a purchaser must pay what the service is worth. I think that idea should be carried into the appliance business—make the customer pay for all and every repair that is made with a margin of profit suffcient to cover overhead and all expense.

Mr. Shearer: In connection with that suggestion, we follow the same method Mr. Perry suggests. There is a profit on the appliance sold in the first place. The Utility Department is not out to make a profit but to run the Department at cost, and if the ordinary retailer can make his cost and his profit out of the regular retail price, then we can make a profit beyond our cost of operation, or else we can put that money into service. We follow the suggestion which Mr. Perry makes in turning a part of the profit on that equipment back into service to the consumer, because that appliance kept in operation is our particular idea. An appliance that is out of commission is both a detriment to the concern and means a knocking from the consumer.

Mr. Perry: I am very much in favor of a liberal policy on the question of servicing. There is some agitation in different Hydro towns that the Commission ought to sell appliances at cost. We in Windsor do not do that. Well sell all appliances at regular list price and we use some of our profit on that in servicing. I believe that our results in Windsor show that we have adopted the right policy. When I speak of Windsor I will also include Walkerville; our two towns are side by side. Our rates are about double what they are in some of the other municipalities but we had combined sales in the two towns last year of in the neighborhood of $525,000. I don't think that can be equalled by any municipalities on the Hydro System with similar population.

Mr. J. E. B. Phelps (Sarnia): I was particularly interested in the statement by Mr. Blay where he said that it was a good policy to be able to quote the prospective range customer a price for the range installed. That has been a detriment in the City of Sarnia for some time. We have not a Wiring Department, and in trying to sell a customer a range there is always the question of installation of the

range which comes up. We have to send them to a contractor-dealer to get a price on that, and in some cases the prices for installing the ranges were more than the cost of the ranges. You can immediately see that only the wealthier class can stand that kind of a charge. Recently we put on a range sales campaign and we started to quote the customer a price for the range installed and we have proved conclusively that it is the right method of selling ranges. We have no Wiring Service at all, but we go to the contractor-dealers and get them to figure on the job and then we choose a contractor from among the number. Incidentally we give the customer the information he wants, and that is one of the points I think that will help the municipalities in placing a large number of ranges in the homes of the people.

I might also ask what the different Sales Managers would consider a fair profit to make on appliances? I would like also to ask whether the different municipalities are maintaing their resale prices? We are doing that in Sarnia. We have always done it. You can't come into the Sarnia Hydro Shop and buy anything any cheaper than you can buy from any contractor-dealer in the city of Sarnia.

One gentleman says we should sell these appliances at cost, that is the slogan of the Hydro—service and power at cost. We must take into consideration that if you have a Hydro Shop the Sales Department should carry its fair charge for the room it takes up in your store. It is a very easy matter to have an office and just do your office work in an office, but if you are going to give people the service and what they want and take care of them you have got to have larger quarters. And possibly if these men figured back some of the expense of running their shops against the profits they are making they would probably find that they are not piling up as large a surplus as they thought.

Another point, I am in favor of maintaining sales prices but I was up against the proposition in Sarnia where we maintained these prices and were doing a nice Christmas business. The contractor-dealer came out with an advertisement of well known appliances, at 20 per cent. off. It knocked our feet right from under us. I think that is a matter the Contractor-dealers' Association should take up.

MR. BLAY: Mr. Phelps says a certain amount of money should be paid for the space taken up by the various appliances. In our shop we pay to the Electrical Department of Head Office, $3,000 per annum or $250 a month rent. We pay for all advertising, salaries and expenses and interest on capital invested and we find that we have at the end of the year a net profit of about from 5 to 7 per cent.

MR. C. A. WALTERS (Napanee): I would like to ask Mr. Blay to give us a little more detail about the installation of 156 ranges in five weeks.

MR. BLAY: During the month of May as already stated we sold 156 ranges and before the end of the first week in June they were all installed. During that time we had from seven to ten gangs of men working all the time on range installations alone. At the end of the month we checked the

average number of hours taken for range installation and we found it to be 9½ hours, which is pretty fast work. That was one man and a helper. The service gang also had to be increased.

Mr. Walters: In connection with water heaters do you think it is advisable to take care of the connecting of the boiler with the heater itself or have that done by a plumber or some other concern? Is it advisable to quote the customer for that work done?

Mr. Blay: I might say in that connection we are selling very few water heaters, due to local conditions. We have a great deal of lime in the water.

Mr. E. J. Stapleton (Collingwood): What percentage of those ranges was six elements, five and four?

Mr. Blay: I would say about 95 per cent. of them were 35 ampere ranges and the balance 60. Due to the present condition of things we find that more people are in a position to buy a small range, three burners on top and an oven underneath, which answers the purpose for the average family, the cost being a great deal less than the 60 ampere range.

Mr. Stapleton: Where ranges and water heaters are being installed, what size are you putting in? How are they connected?

Mr. Blay: We are recommending three kilowatts where they are sold, but not being familiar with the Electrical Department I am not in a position to answer your last question. I would be glad to get that information and supply it to you.

Mr. Buchanan: Mr. Chairman, I have got to plead ignorance of the water heating game. We have looked into that for many years now and have not yet found a satisfactory water heater for London water. There is so much lime that in the ordinary type of circulation heater the tube becomes limed up in two or three weeks and the element burns out if it is not cleaned. Therefore we have not pushed the sale of water heaters and I don't know anything about it. With the few heaters we have installed we have simply put them in and charged up the customer with the cost of wiring. It is a thing I am very much interested in and if there is some heater on the market that would overcome this trouble I think we can sell large quantities of them.

Mr. Stapleton: Are they connected with a double throw switch?

Mr. Buchanan: They are simply put in with a single throw switch on the meter, like any other appliance.

Mr. A. Pritzker (National Elec. Heating Co.): I want to ask something about the double throw switch. A firm in Quebec tried that and it was not satisfactory. If a lady wants to heat up some water at the same time that she is using her range she can't do it, and so they discounted that idea.

Mr. Holden: A little over a year ago I installed a water heater and at first I tried to run it with an open tank. It had no value in the bottom and it didn't work successfully so I was going to throw it out. I put a valve in the bottom of the heater and got some stovepipe and put it around about an inch and a half outside of the tank. I filled the space with sand. My heater used to run pretty nearly

steady to keep the water going. Now my heater runs for about one hour and the tank is hot for the balance of the day. If you put a valve at the bottom of the heater and just turn it on so that it gives you the exact circulation you can heat the top of that tank and have water for a shave, or let it run a little longer and have plenty of water for a bath.

Mr. A. W. J. Stewart (Toronto): Some years ago we did all the servicing for nothing. About two or three years ago we started making a minimum charge of 15 cents for anything that came into the store and found the customers didn't kick on that, didn't pass any comment on it at all. So a year or two ago we raised it to 25 cents for fixing a cord. Fifteen cents is not enough to cover the cost of doing that work. By the time you paid for the repair tag and paid for the sales slip, the men's time and share of the rent of the building which is charged up to the department, and the lighting and heating that we had to pay for it was not enough. We find that 25 cents is a reasonable minimum, and they will pay that for connecting a broken wire. There has not been a murmur on it. A short time ago we decided our range service was not good enough, and we had to have a truck so that when a customer 'phoned in, the Repair Department man could go out and do the job, instead of doing it plumber's style. The chief kickers we had an charging for that were the Repair Department. They were afraid the customers wouldn't pay for it—that the customer would object to paying 75 cents or a dollar for work that would not take more than ten minutes on the customer's premises. We have not had any kicks at all. We find the customer satisfied and we are giving much better service. I think it is much better to supply service at cost than to go out and do it for nothing.

The question of inspection which Mr. Blay mentioned is important, because we found in one case a plumber and an electrician went out and did the plumbing and the electrical work on a water heater. The plumber made the connection and the man got hot water in his garden. The man who installed the heater also drilled a hole in the wall and right on through the down pipe of the eave-trough.

Mr. Blay did not mention the question of demonstrating ranges, but I think that it is important. We find that customers very often do not use their ranges to advantage. I remember one customer who I went to see. She was kicking about high bills and I found she had a range and she used that to keep water hot continuously all day because her son was running an electro-plating plant out in the stable. As soon as the kettle started to boil she moved it over till it covered one-third of the element and she still kept the range going.

I would like to ask what size of wire is being installed in London and whether they are making any provision for any future installations.

Mr. Buchanan: We don't make any special provision for any other appliances because we have tried to get the cost of installation down to a minimum, and the way we are doing is ab-

solutely to comply with the minimum wiring regulations.

MR. CUNNIFF: From a layman's point of view I would like to mention one question in connection with the service and a comparison of service in Toronto. I had occasion to move my office and in moving I had to do with three public utilities, two of which were very satisfactory in the way they handled me. There were four of my boys in the office and when the question of moving came up they said, you are going to have trouble with such and such a company over that. The Hydro came up and one of the fellows who had the least experience said, "You won't have any trouble, you will have electric power to-morrow morning," and I did. Not only that, but the way I was handled in the Toronto Hydro Shop was so much better than I was handled by either of the other two public utilities. I suppose you gentlemen realize that it is not what you do, although what you do does count a lot, if you have got electricity the next morning after you move, that counts, but quite often it is the way you do it that has a wonderful influence on the public.

MR. BUCHANAN: In that connection I might state one or two instances. When anyone comes to our city and applies to us for service, if I get at all friendly with them I say, "Have you made definite application for your telephone yet?" He probably says: "No, I'm going right over." I usually call up the manager of the Telephone Company and tell him that this is a particular friend of mine, to give him special attention, and instead of waiting three or four weeks for his telephone he very often gets it within two or three days. You help the citizens, and after all, we are civic servants and we should put ourselves a little bit out of the way. We should not consider we are just running a Hydro Department. If we can do anything to help another citizen of our city we should try to help him.

MR. A. B. SCOTT (Galt): I would like to ask Mr. Blay whether they do the wiring at actual cost or figure as a percentage of the cost, the cost of the overhead; and whether customers as a rule ask for estimates or accept the Hydro's word on that question, also whether they use the three pole, sixty ampere service box?

MR. BUCHANAN: If you will permit me to answer that question? On the question of the price of our appliances we adhere to the established re-sale price except the newer and less developed appliances. In the case of electric stoves I don't suppose there is a fixed re-sale price on them, and it is a new game you are spending money in advertising. As Mr. Blay pointed out in his paper, the best advertisement is the expression of satisfaction by a customer to a prospective customer. Therefore we think if we can get about 10 per cent. of the citizens of London using electric ranges and satisfied, that we will sell lots more without any effort. Therefore we feel we are justified in making little or no profit on electric ranges. The wiring of electric ranges we pay from the Hydro Shop to the Head Office which handles the wiring part of it—the net cost of installing these ranges. There is no profit or overhead charge in the installation of the range at all. We

have a profit sufficient on the range to cover our overhead in the Hydro Shop, so that the Hydro Shop is entirely self-sustained. There is some overhead on the range installation which is absorbed by the Electric Department.

Customers very seldom ask for estimates on range installations, they accept our price installed.

In answer to the other point as to whether we use the three pole service box, I think we are using the two pole service box, with the neutral carried through.

MR. A. T. HICKS (Oshawa): The previous speakers mentioned the placing of price tags on appliances in the windows. If I recall rightly that is contrary to the Society for Electrical Development. I would like to know what the other towns are doing along that line. We have not followed it out from the advertising standpoint.

MR. EDGAR: I don't recall any such regulation. I think it is generally accepted as being quite proper.

MR. BUCHANAN: I think price tags on all appliances are very important. They inspire confidence. Every appliance in our store is tagged with the price and no cuts are made to anybody. We do not always exhibit show cards in our windows showing the price, but every appliance in the store has a small tag with the price on it.

MR. CUNNIFF: As to showing price tags, it is largely a matter of personal opinion, but it has been demonstrated that we do not need to show price tags, if the value of the article is high. I would show a price tag on all low-priced articles, but I would not show a price tag on stoves and ranges; they scare people away. The tag stands there staring the fellow in the face, the tag can't argue with the fellow, so it is liable to keep the fellow out of the store rather than bring him in.

MR. I. PRITCHARD (Chatham): I would like to ask Mr. Blay or Mr. Buchanan, if the guarantees on appliances are kept in the shop or given to customers. In Chatham we have had some difficulty with a lady coming in and saying, "Your appliance has burned out," and on asking for her guarantee she says she has lost it. Oftentimes the foremen are rather fussy about making repairs when the guarantee is lost.

MR. BUCHANAN: I don't know, but I think the guarantees are given to the customers. That is not the point. Don't argue with your customer. There is only one dishonest man out of one hundred, perhaps a smaller percentage, and I would not for a minute argue with a customer on the guarantee. If he brings in an appliance and he says, I have only had that appliance eight months, even though you know he is lying, give him the renewal, don't argue about it; it will do you far more good than quibbling about the few cents it costs you.

MR. SCOTT: Our practice in Galt is very much along the lines on which Mr. Buchanan has spoken. We register every sale and have a record of the sale of each article that goes out and its guarantee; in that way we can keep track of the guarantee. In any case I think it is far better to lose a little in that way and satisfy the customer than it is to have a difference with him for the sake of a few cents.

As the stove question is a very live one at present I thought we might tell you what we are doing in Galt. After the circular letter was sent out by the Commission urging the municipalities to take the matter up, our Commission decided to go into the business of selling ranges. Up to the present time we have not had capacity to do work of that kind, but we have the prospect of a new building and we thought it was better for us to go into the market now when it is a live question, with the result that in one month we have sold about 40 ranges. We found before we had been in the business more than a week or two it was necessary to put on wiring men to take care of the business. They seemed to be a little sceptical of the local dealers soaking them for the installation. We tried the plan mentioned by Mr. Phelps but we didn't find it worked very successfully, and so we have four wire men and three helpers on the job and our salesmen I think keep them pretty busy. Our salesman says he has 29 jobs ahead of him at the present time. In this connection people seem to appreciate very much what is being done by the local Commission, and I think in spite of the fact that times are rather dull they are going to install a large number of ranges during the present summer.

Now, regarding prices, we started in and we are handling principally the Moffat Range. We take their price list and we have added 20 per cent. to that. We charge for the wiring and we keep a record of the actual cost of the wiring and all the material that enters into it. We have added 15 per cent. onto that to cover overhead and we are maintaining the resale prices very strictly. We believe that is the proper way.

MR. W. S. WEST (Woodstock): May I ask the previous speaker what opposition he has had in Galt from the other merchants handling electrical appliances?

MR. SCOTT: We have been criticized quite a good deal by the local dealers. The actual situation is something like this. There was only one firm in Galt doing anything in the way of installing ranges and that was a jobbing house. They were rather in disrepute with the local dealers because they were doing a jobbing and retail business at the same time. That was really the only firm that was doing anything in the range business in Galt, and I think we have taken most of their business away from them. They have been cutting prices a little but I think we have convinced the people that in spite of that fact and the fact that we are maintaining the prices, we are giving them a better service and a cheaper service than they were getting from this firm.

MR. WEST: We opened a Hydro Shop a little over a year ago and we have had all kinds of opposition from the merchants. But as the previous speaker has stated, we have found we have 90 per cent. of the citizens of our city with us in what we are doing in the handling of stoves and electrical appliances. What service does Mr. Blay or Mr. Buchanan give to people who purchase appliances from outside merchants?

MR. BLAY: I might say we service

any appliance regardless of where or when it is purchased.

Mr. Scott: There comes to my mind a question which is a live one with us just now. The local dealers have approached us with a view to buying appliances, particularly stoves, at a discount with a view to installing them. I would like to know whether the other municipalities have had that —local dealers coming to them as a supply house and buying material just at a slight advance over our actual rates and then selling them in competition with us at retail prices.

Mr. Buchanan: I think that is an excellent idea. You know the dealers are making a big noise in many cities, as Mr. West of Woodstock says, about the Hydro Shop going into this business. Of course they are very few. The welfare of the many citizens I think should be considered first, but if we start the Hydro Shop and run it we ought to try to co-operate with the dealer. We should not try to put him out of business; we should help him to make a bigger business if we can. If the dealer wishes to buy ranges from us and we can enter into some agreement whereby we can assist him to install these ranges I think we ought to do so. We have encouraged co-operation with the dealers in London. We have even gone to the extent of putting ranges in stores on consignment and allowing them to sell them.

Mr. Shearer: As to the consignment basis, we have been following that up to a limited extent in Smith's Falls. We find it means the co-operation of the contractor-dealers with us. We can't afford to do without that co-operation. If they are able to sell a range for a cash price, we make an arrangement with them for division of the profit on the range. If the purchaser is not able to pay cash for it but wishes the instalment plan the contractor-dealer doesn't get anything for it but turns it over to us because we carry the instalment plan ourselves.

RESUSCITATION

By WILLIS MACLACHLAN,

Hydro-Electric Power Commission of Ontario.

Ladies and Gentlemen:—

The Department of Education of the Province has had prepared a film on resuscitation from electrical shock and drowning. It is the intention to have this film shown in the schools of the Province and also to have it released so that it can be used as a "filler in" in the moving picture houses generally. By this means it is hoped to interest and instruct school children and the general public in the Prone Pressure Method of Resuscitation which has been so successfully used by trained persons. In showing this film to you I wish criticism, as it is a proof or test film and we wish it to be as perfect as possible.

(The film on Resuscitation was then shown).

There are certain points that I wish to draw to your attention:

1. Ammonia was not placed too close to the patient's nose.

2. The heels were hit so that a nervous shock would be set up.

3. No emphasis was placed on opening the mouth and clearing it as it is often found it takes too much time and is not essential.

4. In drowning cases, resuscitation is commenced immediately; no time is wasted in rolling patient on a barrel.

QUESTION—If anybody touched a live wire wouldn't he be killed instantly?

MR. MACLACHLAN—No! We have cases of shock from 500 to 110,000 volts successfully resuscitated.

Of course if the victim is in contact long enough to destroy tissue, very little can be done for him.

QUESTION—What happens if anybody touches a wire?

ANSWER—Usually the most important thing is that the diaphragm is temporarily paralyzed.

QUESTION—Is it essential, after a man has been brought to, that he be kept quiet and absolutely at rest.

ANSWER—Yes! Absolutely quiet.

The patient should be removed to either his home or hospital in a lying-down position and should not be placed in the seat of a motor car. He should be kept lying down.

MR. R. H. MARTINDALE: I am sure this film and Mr. Maclachlan's address has been of considerable benefit. I cannot help but believe that this idea of presenting such a film to the general public cannot but result in immense benefit. I think the moving picture is one of the finest methods of reaching the people and the children. The scenes that are illustrated on that film will be impressed on the minds of the children and of the general public who are not familiar with these matters. It is quite true a great deal has been printed on the matter of resuscitation but there are thousands of people in this Province who have not read at all about resuscitation and who are not interested. I think the presentation of this film throughout all the picture houses in Ontario, in fact throughout Canada, cannot help but result in an immense amount of good and will also assist I believe in preventing accidents. The idea is an excellent one and it should be seen to that the film has a very wide presentation throughout the country.

MR. O. H. SCOTT (Belleville): While this resuscitation looks very easy it is a very difficult or tedious matter when you get a real patient. Simply practicing it it is not very tiring, but when you get a patient that has to be resuscitated it is one of the most tiring things that you ever got up against. The only way you can get yourself into real condition to handle it is by continuous practice. Our boys practice it twice a month. Two weeks ago one of them had occasion to resuscitate a young lady from drowning. He was at it about ten minutes. He said he didn't appreciate what it meant to work on a body that was practically dead. He said it was 100 per cent. harder than to follow regular resuscitation practice.

MR. MACLACHLAN: In the case Mr. Scott refers to I think the girl was in the water about five or ten

minutes before they got her out; she was submerged. We had a case on the Ottawa River which was resuscitated by one of the employees of the Ottawa Electric Company where the man was from 15 to 20 minutes submerged before he was rescued and then successfully resuscitated.

1. The prone pressure method has been so universally successful that every endeavor should be made to have employees fully trained in it and to practice it regularly.

2. The public interested in the matter.

3. The school children taught how to do it.

I will be very glad to supply anyone with the necessary information as to the method should they desire it.

Safeguarding the User of Electrical Appliances

By W. C. CALE,

Assistant Laboratory Engineer, Hydro-Electric Power Commission of Ontario

BY the term electrical *appliances* is usually meant those devices, mostly portable and therefore connected by means of flexible cord to a supply circuit, which utilize electricity in the form of heat or of mechanical power to give service of a definite character to the user of electricity in the home, office or factory. Such devices as electric toasters, irons, soldering tools, radiators, fans, washing and cleaning machines, etc., are all classed as appliances, in this sense.

In considering the use of electrical appliances there must be included the outlet from which the current is derived to operate the device and the necessary wiring and distribution system on the premises to bring the current to that point. So that a broad view of this subject might include a study of the method of distribution of the current and of the fittings and material used therefor. It will probably not be necessary however to enter into an extended discussion of the means of distribution because these systems are already standardized to a high degree. The various systems used in the wiring of residences, office and factory premises, etc., have been carefully worked out by the framers of the National Electrical Code and latterly in this province by the Rules and Regulations Committee of the Hydro-Electric Power Commission and are published in great detail. The electrician making use of these rules is furthermore required to submit his finished work for inspection so that the hazards which at one time existed due to defective wiring have to a large extent disappeared. Moreover, the user of the electrical appliances does not in general come into contact with the wiring or the fittings and material used by the electrician and ex-

cept at the outlets or at the control devices there is practically no life hazard attached to this part of the job. Our main theme will therefore be confined to a discussion of the hazards to be found in the portable appliances previously described and of the means taken or to be taken to eliminate them.

In the past and at the present time most of these appliances have been offered for sale to the public through the agency of stores of many kinds throughout the country. This very fact has made the problem a much more difficult and complex one than it would at first sight appear to be. Through the medium of such stores which range from the beautifully fitted appliance shops of the larger electrical distributing systems to the corner drug store and the small struggling hardware store, which sells an occasional iron or toaster as a side line, the distribution of electrical goods direct to the public is carried on. It may be assumed that the majority of those who become the users of these electrical appliances are only dimly acquainted with the theory and construction of the device they have purchased. That is, the ignorance of the user makes it imperative that these devices put into their hands be as near foolproof as possible.

This brings us to the question "From what dangers or hazards is it necessary to safeguard the user?" To answer this question one would have to discuss in detail the various types of appliances in use and point out their weaknesses or potential weaknesses, but generally it must be admitted that appliances as they are put out to-day are not 100% foolproof. There are hazards to life and property to be guarded against in the production of most electrical devices and it is the elimination of these hazards with which we are here chiefly concerned. The manufacturer must use certain safeguards in the construction of his devices such as electrical insulation, heat insulation, if it is a heater, and adequate strength and durability of mechanical parts.

There are others interested in this problem however, and it would be well at this point to discuss the relationship of the various sections of the community who should have a part in same.

Responsibility for safeguarding the user of electricity rests upon all concerned with the supply of electricity and electrical appliances, upon the government, and upon the consumer himself.

The manufacturer shares this responsibility. He can acquit himself of it by exercising care in design and construction. The former requirement involves adherence to safe and standard methods of design as laid down by good engineering practice and as set forth in rules promulgated by inspection authorities and following practice generally accepted as embodying minimum requirements consistent with safety. The latter requirement involves careful attention to factory processes, and rigid inspection. The manufacturer can also aid in educating the public in the proper use of electricity by judicious advertising and by proper directions when necessary for the use of his product. Advertisements to the effect that cer-

tain devices may be attached to any lamp socket may be productive of danger, as both the sockets and branch circuits of most of the older residential installations are not adequate to the demands which would be imposed upon them by the unrestricted connection of devices to lamp sockets. The consumer should rather be encouraged to provide convenience outlets, and a statement by the manufacturer of the power consumption of his devices will aid the consumer in the safe use of such devices.

The electrical contractor-dealer shares in the responsibility for educating the public and being in closer touch with the ultimate consumer than any of the other parties, his opportunity and responsibility are on that account greater. He can assist primarily by selling only approved goods, and thereby giving the public a product which is designed and constructed in accordance with sound and safe principles. He can also disseminate useful information regarding the proper use of electricity and to that end should be informed as to the regulations which are of direct interest to the consumer.

The commercial and technical organizations have a direct interest and responsibility in safeguarding the user of electricity. The sale of substandard goods will ultimately react against the use of electricity and is obviously not to be desired from the point of view of the merchandising agencies. It is therefore in the interests of the manufacturers', dealers' and jobbers' organizations to discourage the production and sale of such goods by co-operating with inspection authorities in the carrying out of the regulations.

The interest of the central station lies in the desire to avoid undesirable conditions on its lines caused by the connection thereto of devices which may by failure cause breakdown or interruption of power or which may by reason of design be objectionable from the point of view of voltage regulation, power factor, unbalancing of circuits, etc. Since many central stations maintain stores they share the responsibilities of the contractor-dealer referred to above. They may also be of service to the consumer in maintaining repair departments adequately equipped and under competent inspection.

Responsibility for safeguarding the user of electrical devices rests also upon himself, as much as upon any of the other agencies. His responsibility lies in the proper use of the devices supplied to him. Hazardous features in devices may be reduced to a certain point by care in design, manufacture and inspection, but misuse may introduce hazards against which it is impossible to provide. The consumer should guard especially against shock from the use of appliances in damp places, and in the overloading of sockets and branch circuits. He should also keep all electrical devices in good repair and not attempt repairs himself but have them done by a competent agency. The continued use of defective apparatus has resulted in several fatalities in this district within recent years.

The government's responsibility may be classified under the head of Public Safety. Its duty is therefore to make such regulations as are neces-

sary to secure and maintain safe standards of construction. This involves the preparation of specifications for test and construction, in the examination of the manufactured product, and in the periodic inspection of the same.

In the Province of Ontario the government's responsibility has been deputed to the Hydro-Electric Power Commission and by authority granted to the Commission under the Power Commission Act an Inspection Department and an Approval Laboratory have been established to carry out this duty. It is not the intention here to go into details of the operation of either of these sections of the Commission's activities. The former is, I believe, quite familiar to all of you and the latter was very thoroughly described at the winter convention of this Association in January last by Mr. W. P. Dobson. A few points should however be touched upon here to show how these two sections work together to safeguard the user of electrical appliances.

The regulation of the manufacture, distribution, installation and use of electrical apparatus and material generally may be divided into three divisions:

(1) The approval of their design and construction.

(2) Regulation of their sale and distribution to prevent the placing of unsafe devices in the hands of the public.

(3) Rules for their installation and proper use.

As will be seen the Approval Department is asked to co-operate with the manufacturers in connection with division (1), the Inspection Department with the contractors and dealers and central stations in regard to division (3), while both of these departments are concerned in the enforcement of such regulations as may be necessary under division (2).

In Mr. Dobson's paper the method of procedure in the approval of electrical apparatus and material was outlined and the Re-examination and Follow-up service by means of which a check is kept upon the product of manufacturers using this approval service, was described. It was also shown that the standards and specifications in use in the Laboratory were to a large extent the same as those in use by the Underwriters' Laboratories of Chicago, thus eliminating as far as possible, special requirements and assisting manufacturers to produce goods which will be acceptable not only in Ontario but in other sections of the country as well. Without going further into the detailed working of the Laboratory in general it may be of interest to show what we are doing to render portable appliances for which no specifications have previously been issued, safe for the user.

Portable appliances in general fall into two classes, heating appliances and motor-operated devices, and the personal hazards incident to them may also be classified as of three general types:

(a) Electrical hazard — shock — from defective insulation or exposed live parts.

(b) Mechanical hazard—injury—

from exposed shafting, gears, belts or broken mechanical parts.

(c) Fire hazard—burn—from improperly designed portable motors and transformers as well as from heating devices of a variety of types.

To eliminate these as far as possible is the duty of the Approval Laboratory in co-operation with the manufacturers. And with the Approval Laboratory, of course, is coupled the Approvals Committee whose advice is sought and criticism invited on all reports made by the engineers of the Laboratory.

Protection against possible defective insulation is mainly provided for by ample clearances where live parts are not fixed and by the provision of a rigid connection where clearances are small as in some heating appliances together with a large factor of safety in design of the insulating medium itself. For portable heaters or stoves of less than 660 watts capacity a voltage test between conductor and frame of 600 volts for one minute is given to the submitted sample after it has run at full heat until temperatures have become constant on its various parts. Each manufacturer is afterward required to test each piece produced in duplicate of this sample with not less than 500 volts before shipping same from the factory. Small motors used in washing and other cleaning machines are required to pass a similar test at 900 volts and each motor must be so tested after assembly to insure that the insulation has not been damaged in any way.

Another feature in connection with the elimination of the electrical hazard consists in the examination and criticism of devices where current-carrying parts are exposed to accidental contact. Among points which have been discussed with various manufacturers are the lack of proper protection around the terminal pins on devices, such as irons and toasters, exposed terminals or brush holder caps on small motors, and incomplete insulation of live parts around cut-out bases in ranges. Since the inauguration of the Approval Laboratory a considerable improvement has occurred in the standard of construction of several of these lines of appliances, and the user is thereby protected in the use of same.

There are certain machines electrically driven, such as washing machines and vacuum cleaners which by reason of the fact that they are placed in the hands of ignorant persons must be made almost foolproof. There is an added danger with the washing machine in that it is used in a large number of cases in damp basements where the electrical hazard is a very real one. In conference with the manufacturers of washing machines a specification was drafted and adopted by the Commission in September, 1920, covering the minimum requirements for the design and construction of washing machines driven by electric motors. It is not claimed for this specification that it is perfect yet but since it was issued and put into force considerable progress has been made in the elimination of both the mechanical and electrical hazards from such machines. Until some effective means of grounding the metal frames of such devices is agreed upon it is required that the motor used on

a washing machine must be thoroughly insulated from the metal work and effectively isolated so that the user could not accidentally touch it—it is considered that it may become a source of danger from defective insulation at some future time.

In taking care of possible mechanical defects in devices which are presented to the Laboratory for review, the device is subjected to such usage, rough or otherwise, which it would normally receive in service and note made of any tendency to fail in any part of it. All revolving parts in motor-driven equipments are required to be guarded so that the user's clothing may not be caught and injury more or less painful result. The purpose of the Approval Laboratory has been to eliminate all danger as far as possible and to make the stamp of approval of the Hydro-Electric Power Commission a real safeguard in itself.

Hazard from fire in electrically-heated apparatus may not be wholly guarded against. Where there is sufficient heat to boil a kettle and fry a chop or make toast there is sufficient heat to set fire to combustible material. So that portable cooking appliances can not be said to be free from fire hazard but they can be made relatively safer to use in the home than gas or oil-heated apparatus used for the same purposes on account of the elimination of the open flame. Air heaters on the other hand must be so designed that they will not ignite cheesecloth thrown over them nor ignite the carpet by reason of being overturned face down on the floor. Tests are made on each heater submitted to check these points. If the heater is of large capacity the heating element must be designed to operate at the proper temperature and the enclosing case made large enough to meet the required conditions of the test.

A specification is in course of preparation which will endeavor to set minimum requirements for the construction and tests of portable heating appliances of both these types. The difficulty of preparing such a general specification may be realized when one considers the variety of designs not only in shape and style but in means of supporting and insulating the heating element which is found in appliances offered for sale to the public to-day.

Any system of approval of electrical appliances which did not take into consideration the regulation of their sale for the purpose of barring unapproved devices and preventing their distribution would fail to receive the support of the manufacturers who were subscribing to the approval service. If no attempet were made to control the sale of poorly constructed and unsafe appliances the manufacturer of shoddy goods would have an unfair advantage in competition with the manufacturer of approved lines. The Commission has power to control such sale and distribution, however, but has not as yet been called upon to exercise it. It would not hesitate to do so however if it were shown to be in the interest of public safety to ban certain appliances from the Ontario market.

There has been a large number of appliances and fittings for wiring offered for sale, many of which were

not necessarily hazardous in construction, but which had not been submitted to any approving body for test and examination. According to the regulations these have also been classed as unapproved and until placed on the approval list cannot be legally sold in this province. Many of these devices were made in the United States and the distribution thereof is somewhat more difficult to control. It has been our custom in the past to gather information from various sources regarding the appearance of unlisted goods in Ontario and to notify the manufacturer of the regulations suggesting that he attend to the approval and listing of same at once. In case the manufacturer has received approval from the Underwriters' Laboratories and there is no objection to the use of devices of that character in this Province he then makes application for listing in the records of the Hydro-Electric Power Commission at a nominal fee which merely covers the expense of checking up the record card or cards and having them printed.

With all our regulations however, and the co-operation of the Inspection Department in the checking up of the sale and distribution of unlisted devices it has not been possible as yet to say that everything electrical which is offered for sale in Ontario has been approved. Dealers and central station managers could assist in bringing about this much-to-be-desired state of affairs by being careful to specify on all orders for wiring supplies for portable appliances and electrical apparatus of all kinds, except that which is to be installed in public substations and power houses, that it must be approved by the Hydro-Electric Power Commission. A request for the approval number applying to the article ordered would soon show whether the device was actually on the approval records and this information if doubted could be verified from the card index at the nearest inspection office. It is hoped in the next few months as the record is now nearing completion to issue a printed approval list for general distribution. In the meantime information regarding this list will be cheerfully given by the district inspectors or by the Approval Laboratory.

The function of the Inspection Department in regard to the use of portable appliances is more in the regulation of provision for proper outlets from which they may be supplied. This was briefly touched upon in the opening remarks and will be enlarged upon in the concluding section of this paper. Suffice it to say at this point that the Inspection Department cooperates very closely with the Approval Laboratory in this connection, members from one department having been appointed to the advisory committee of the other department. At the present time a general revision of the Rules and Regulations for inside electrical installations by a sub-committee on which the Approval Laboratory is represented is underway and it is hoped that when this is finished that both the regulations for approval of devices and the rules for their installation will be found to have been simplified and brought more into line with the advanced ideas concerning the safeguarding of the consumer in his use of appliances.

The fatalities due to the use of de-

fective appliances in the home which have been reported during the last two or three years have invariably occurred in bathrooms or similar locations which are known for want of a better term as "damp" locations. In this province and in fact in the majority of cities on the continent, the middle or neutral wire of 3-wire secondary distribution systems is permanently grounded thus making it possible for one to receive a shock by coming into contact with only one of the outside wires while at the same time touching any water pipe or other grounded metal work in the house. In fact shocks from 110 volt sources are rendered more numerous on account of the grounding of the secondaries. It does of course offer protection against high voltage currents straying into the house wiring if the grounding is improperly done and of low resistance. Any defect in the house wiring itself is also discovered at once by the opening of the fuse protecting the circuit in trouble. While the protection afforded by the grounding of secondaries is therefore very necessary it has made the problem of safeguarding the user of appliances a very difficult one with our present system of wiring.

The discussion which has been carried on by contributors to the pages of the Electrical News in the past five months has brought forward several more or less valuable suggestions. A summary of these suggestions may perhaps be of service. The question which those who contributed to the discussion were endeavoring to answer was briefly stated as follows: "What is the best way to prevent further bathroom fatalities?" In this discussion it was soon seen that any system which would prevent bathroom fatalities would practically solve all problems connected with accident hazards due to electricity in the home. The remedies suggested take three main lines: (a) education of the buying public or the users of appliances; (b) rules and regulations in regard to the construction of appliances and to the wiring of outlets for their use and, (c) conferences and conventions among members of the electrical industry for the discussion of these topics, such as the present one which I have the honor to address.

Much stress was laid upon the education of the consumer or the buying public so that he may know the safe types of appliances to buy and how to care for them and use them properly. The first need can be supplied by the issue of a list of approved appliances and the proper marking of appliances approved by a recognized authority. Such a list is issued by the Hydro-Electric Power Commission and has been already outlined in this paper. The second need is rather more difficult to supply and the various suggestions for meeting it have to some extent been already touched upon but will bear repeating.

1. Appliances offered for sale should bear warning tags marked "Dangerous to use where there is liability of touching water pipes or other grounded metal." These tags should be supplied by the manufacturer.

2. The dealer in making the sale should advise the buyer carefully on

the proper use and care of the device.

3. The central station or supply authority should keep the consumers advised of conditions under which appliances become dangerous and of the need for proper maintenance and repair of them.

Several methods for carrying these messages to the public were suggested:

(a) Printing same on the electric light bills.

(b) Where a regular bulletin is issued for purpose of increasing the sale and use of appliances space should be found there for cautions as to their use.

(c) A definite safety campaign by means of carefully worded messages in simple non-technical language on cards to tuck in with the electric light bills would be of great value in most communities. Such a campaign was put on in the town of Listowel recently and some of the cards used reproduced in the technical papers.

4. The safety message should be carried to the children in the schools. This is being done by the Ontario Safety League who have recently issued electrical bulletins which should be placed in the hands of every teacher in communities where electricity is in common use.

While the education of the user is apparently the primary need it must be supplemented by every means the ingenuity of the engineer can suggest for the elimination of the accident hazard. No system of education can be 100% efficient in results produced. Very small children and absent-minded grown-ups will not be protected against themselves with all the printed warnings ever issued. That is no reason however why there should be anyone ignorant of the danger in the use of electrical appliances under certain conditions if a system of education will prevent it. Any educational campaign unless very carefully prepared might result in frightening people away from the use of electrical appliances which would be a calamity. Electrical appliances are such a boon to the average householder that anything which would tend to lessen their use would work a hardship which might not be offset by the resulting immunity of the user from accident. It is believed however that such a campaign can be carefully prepared and presented without any such ill effects along these lines so let no one hesitate on that account.

As a supplement to a scheme of education various rules and regulations have been suggested some relating to the construction of appliances, others to the wiring of premises and still others which involve both. First, in regard to the construction of appliances.

(1) It is claimed that much improvement is needed in the design and construction of portable appliances especially in regard to the insulation used therein. The more general use of porcelain in place of mica for bushings and supports is advocated as the former cannot be so readily tampered with and "fixed up" by the "handy man" around the house. This is especially desirable in the construction of air heaters which have been responsible for the most of the fatalities reported.

(2) A more rigid system of in-

spection of the design and construction of appliances and the banning of the use of those of faulty design is also suggested. In Ontario it is believed that the system of approval testing and inspection outlined has already begun to show definite results. It must be admitted however, that there are many devices still in use which were originally defective in design or construction but were produced before the approval service went into effect. These devices will probably be used until the public is educated to the point of replacing them by safer and more efficient ones.

(3) The repair of appliances by amateur or irresponsible persons is recognized as one of the problems involved. A suggestion has been made that it be made illegal to repair any electrical appliance except with the proper parts or material. To the writer this hardly seems feasible. The licensing of shops where such articles might be sold and repaired would perhaps solve this problem to a great extent.

Secondly, in regard to the wiring of outlets.

(1) The placing of outlets in hazardous locations has not received the attention it should have from the proper regulating bodies. The old National Electrical Code was principally concerned with reducing the fire hazard and did not take into account the installation of wiring and outlets to prevent accidents to persons. In recent years there has been a tendency to alter this point of view due to pressure from many quarters but it is still a question whether the Safety Code would not be better enforced if separated from the Fire Code. A suggestion made on account of this inflexibility of the National Electric Code rules is that it be made illegal for a lighting or central station company to supply a building where outlets have been placed in dangerous locations in bathrooms or basements or near water radiators or other grounded metal work. The Ontario Rules do take this into account to some extent but might go further along that line. In a Western city alll bathroom lighting outlets are required to be placed on the ceiling and switches placed out of reach of any person touching a water pipe or in any way liable to be connected with ground.

(2) Probably the most effective means of preventing accidents from electrical appliances would be the enforcement of rules requiring that the metal frame of each appliance should be effectively and permanently connected to ground. Rules are now in force requiring that stationary appliances shall be so connected but it is recognized that at the present time no effective means is in general use for the connection of portable devices. Suggested means of doing this were two in number.

(a) As required by the National Electric Safety Code, the appliance should be provided with a 3-wire cord and plug and the outlet fitted with a three point receptacle so arranged that one point is connected to ground. The prong in the plug corresponding to this point should be connected with the frame of the portable device and means provided so that it could not be connected except to this point. As

will be seen this would entail the provision of a ground bus throughout the installation as it would hardly be feasible to make connections to water or gas pipes at each outlet. The cost of such a system would therefore be much greater than present systems. Unless all convenience outlets on the premises were provided with 3-point receptacles and all devices equipped with proper plugs and cords there would be confusion in the use of appliances on the proper receptacles as there has been in the past due to the multiplicity of types. If it is necessary to provide still another type for somewhat general use the problem of standardization of these fittings will not be advanced but rather retarded.

(b) The second method would employ polarized receptacles and plugs and would provide that the frame of the heater be permanently connected to the grounded side of the circuit. This would require that polarity be marked at all outlets and that all fittings be also arranged so that the grounded side could be readily recognized. The use of plugs of the so-called "convertible" type would not be permitted with such a system as by simply changing over the prongs on the plug the frame of the appliance would immediately become a deadly menace. The standardization of plugs would be almost compulsory with this method.

Approved fittings are already on the market by the use of which either of these methods could be put into general use when required. Sockets, receptacles, etc., are also being marked by some of the manufacturers in the United States to assist in maintaining a uniform scheme of polarity, oxidized terminal screws being provided at the point where the grounded wire should be attached. The last issue of National Electric Code contains two rules which should assist greatly in putting into effect a polarized system of receptacles. All twin conductor wire and cable is required to be marked in such a way that each wire may be identified where necessary at any point throughout its length. The previous or 1918 edition contemplated putting into effect a rule requiring that the neutral conductor in all 3-wire and one conductor in all 2-wire circuits be marked with an identifying insulating covering readily distinguishing it from other wires. This rule has been withdrawn for the present however in favor of the one just mentioned. While the present rule is the entering of the wedge of an improved scheme of wiring it does not go far enough in the writer's opinion and he would like to see the 1918 rule put into effect as soon as the necessary wire could be produced by the manufacturers. Furthermore, the 1920 Code rule on fixture wiring requires that fixtures with metal shell sockets must be wired and the wiring marked so that the inner screw shellls may be connected to the grounded side of the circuit. It may be stated here also that such a rule has been placed in the tentative fixture specification recently drafted by the Approvals Committee of the Hydro-Electric Power Commission. It would thus seem to be logical to carry the polarizing idea a step further and require all plug receptacles and plugs to be polarized as well as sockets and fixtures. It

would seem from this discussion that no other means so far suggested would as cheaply and readily provide for the grounding of frames of all portable appliances with the desired protection to all users whether ignorant or well-informed of the dangers accompanying their use.

Critics of the poarized system of wiring and the connection of non-current carrying metal parts of devices to the grounded side of the circuit will perhaps not agree that this scheme will render appliances 100% safe. It is certain it cannot do so unless the permanent ground connections to the secondary distribution network are well made mechanically and are electrically of low resistance. But where the grounding is properly carried out the scheme as outlined should solve the problem under discussion.

DISCUSSION FOLLOWING MR. CALE'S PAPER.

Mr. H. O. Fisk (Peterborough): It would appear from the speaker's remarks that the thing that is necessary is to have the case of the appliance grounded thoroughly. It seems to me that the thing now to be done is to get the manufacturers to put these appliances on the market in such a way that they can be effectively and unmistakably grounded; that is with the proper kind of cable and marking so that it will not require an expert to bring these proper conditions about. If that is the solution it seems to me the quicker we arrive at it the better.

Mr. H. F. Shearer (Smith's Falls): I am sure we all appreciate the paper Mr. Cale has given this afternoon. It is a subject which can cause a great deal of anxiety to every central station or Hydro manager.

There is a complimentary question to this one in the matter that was laid before the Provincial Legislature at the last session. Most of you who are following that, know that Mr. Swayze, the member for this constituency, introduced a bill in which he seeks to protect the consumer from the irresponsible and incompetent contractor who undertakes to do wiring, the man who has had little or no experience and yet thinks he knows sufficient to start out and do contracting for himself. I believe we have just as much reason to safeguard the electrical consumer in the wiring of his premises as we have in the manufacturing of the appliances which he uses later on. If it is not out of the way I would like to see this Association take some action in regard to supporting the bill which was introduced in the legislature but which has been laid over until the next session, and co-operating with all that have like views in the matter, and seeking to get this legislation passed at the earliest possible date.

I move that this Association approves of the legislation presented to the recent session of the legislature by

Mr. Swayze, providing only those having proper qualifications should be permitted to make electrical installations, and that the executive of this Association be instructed to take the steps necessary to promote the passing of these regulations at the earliest possible date.

Mr. W. E. Swartz (Dunnville): In regard to Mr. Shearer's motion, as I have always understood it, the Inspection Department should, if they don't, give protection. In regard to Dunnville, the town which I have charge of, the Inspector for that district will not allow a man to start wiring until he has had experience and is perfectly competent to do it. After that work is done it has got to pass inspection before it is allowed to be coupled up. I think that is up to the Inspection Department.

Mr. Shearer: In further explanation of that, we have had recent experience that would emphasize the need of such legislation as is being introduced. In a good many districts, as I understand the inspectors are instructed to issue permits to anyone making application on the understanding that the work will be done satisfactorily before service is given. That is the interpretation. The Inspector in our district makes the regulations. We have had a case where an incompetent man who, with only four days experience in wiring under any conditions, attempted to do it. The result is that he has had job after job held up and our inspector refuses to issue him any more permits in his own name. He then had them taken out in his helper's name. In this way he has caused the inspector a great deal of wasted time and annoyance and he has to a certain extent put the supply company in disrepute with consumers or would-be consumers because he has held up the giving of service, while some other contractor may have started a job more recently and yet has done the work perfectly and service is given. It is not only safeguarding the electrical consumer but it is eliminating any possible misunderstanding of the central station with the consumer. If we had only competent contractors the work would be undertaken by them in a businesslike way and would be executed perfectly and in accord with the rules and regulations. But if these jacknife contractors start into the game they are wasting a lot of time and they are not giving service to the consumer. After all that is the ideal thing, service to the consumer.

Mr. Swartz: I think this matter could be handled altogether by the Inspection Department. If the rules at present do not cover that point they can pass regulations to that end.

The President: There has been no seconder to the resolution.

Mr. A. T. Hicks (Oshawa): I second the resolution.

The President: The question is open for further discussion.

Mr. Ostram: Mr. Cale referred to Mr. Maclachlan having some information to the effect of shock from 110 volts. Probably Mr. Maclachlan could give us that information in connection with heating fixtures in the bathroom and whether the effect is on the diaphragm or on the heart. I would also like to point out that in the motion pictures this morning the

plug that was inserted into the socket was not separated, it was simply screwed in and attached to the cord.

MR. MACLACHLAN: I don't want to discuss the motion. I might refer back to the paper in answer to Mr. Ostram. I might refer you to an issue of THE BULLETIN which supplied some information to the Laboratory Engineers. It was the result of a test we had down in New York two or three years ago. One point was, a man with his hand in water up to the wrist, the water being contained in a can on one side of the circuit, and clasping a pair of pliers in the other. We tried that on a number of assistants and others, various types of men, and the average amount of voltage they could stand was between 8 and 12 without excruciating pain, when they called to the man to stop raising the voltage. The average contact with any contact will be difficult at 16 volts. One thing I think we have got to realize is that low voltage with good contact will kill. It will not usually kill by paralysis of the diaphragm but it is by affection of the heart. The heart is working like two hands with all the fingers coming together, and it is what may be called throwing the heart muscles out of synchronism, and there is no known method of throwing them back into synchronism. This point will have to be realized—that low voltage with good contact will kill. As a matter of fact I think it could be said that the unfortunate woman that was killed in the bathtub in Toronto did not receive anything like 110 volts; she couldn't have received anything more than 70 volts. It is thought she received about 30. Two or three years ago we had an electrical engineer in Toronto killed by a low voltage shock in a damp place, using a type of cord which was absolutely not according to the approved methods. Quite recently we had a young boy from one of the Technical Schools in Toronto attempting to handle a primary wire on the street. I think we have got to educate ourselves to the danger of handling live wires at any voltage in damp conditions, then we will be in a fit state to go out and educate the public.

In regard to bathroom fixtures, I remember some years ago in Belleville the switches for bathrooms were put in the hall. We simply made a definite statement that no service would be given if they were put in the bathroom.

I would like to compliment Mr. Cale on his paper. He treats the subject sensibly from a number of different standpoints. I am only sorry there is not more time to go into them.

MR. DON CARLOS: In regard to the question of polarized plugs, that Mr. Cale brought up, as to the two methods of eliminating this hazard, using a three wire cord and the polarized system, it strikes me the polarized system is much safer than the other method, for the reason that if one of your wires broke, if it is the ungrounded wire your fixture is not dangerous any longer. If the grounded wire breaks the fixture is out of commission and it will be noticed at once. Then our educational campaign would probably cause the customer to investigate and find out what the trouble was. On the other hand using a three wire cord, if your ground wire is broken your

fixture is still giving service and he probably wouldn't know anything about it till he got into trouble. The polarized system, using the polarized plug would also be cheaper I believe and the cord less cumbersome. With the three wire plug you would increase the size of the cord and it would be a little more inconvenient to handle. But in regard to the educational campaign it strikes me that there is another point which Mr. Cale has mentioned, and that is that a whole lot of consideration in education of this kind is going to frighten the consumer away from the use of appliances of this kind. After all a large percentage of the accidents that have occurred are in bathrooms. It strikes me it would be a good thing to prohibit the use of movable or portable fixtures in bathrooms and in certain dangerous places. I doubt very much if anybody can show any fatal accident from the use of the iron or toaster or any fixtures or appliances of that kind because they are very infrequently used in dangerous places. But the use of portable heaters, especially under present conditions, in the bathroom is undoubtedly a dangerous proposition and should be prohibited, and the public should be educated against the use of those fixtures in such places. But there is no question that an attempt to educate the public to protect themselves with the present system in use is going to tend to frighten people away from the use of such appliances.

Mr. C. E. Kirkby (Brantford Twp.): I would like to ask if it wouldn't be possibly more safe to place some handle or some method of taking hold of the electric heater where it would be safely insulated from either the line or grounded side of your appliance? If you ground the outside of the case of your appliance and someone in making the repair switches that over you make the appliance much more hazardous than it was if it had not been either grounded or live before. I would ask a question—whether it wouldn't be more safe to have a satisfactory insulated handle on the appliance so that it could be moved about safely.

Mr. Cale: In regard to Mr. Kirkby's question I doubt very much whether a handle could be put on a heater in such a position where the person that wanted to move it wouldn't as soon use some other part of the heater as the handle. When it comes to the question of moving it, it might be in a position where it was as easy to push it as pull it and the user would then get just as bad a shock if he touched it. As a matter of fact I think most heaters have such a handle except some of the older types. Of course a good many of these accidents are occurring and have occurred through the use of heaters that have been in service for some time.

In regard to the point about the changing over of the cords and the plug being re-connected, we will probably not be able to cover all these points by any regulation or any rule. It is a question of education to see that the repairs are made by competent persons. In the case where you used the polarized system the cords would have one wire marked and a competent man would know which wire should be connected and he would see that the terminals at each end of that

marked wire were connected to the "blue" screw, for instance. I think it is a question of education on the proper repair of appliances which must also be considered in any discussion of any rules we may make for the use of these things.

Mr. Fisk: The idea of keeping switches out of the bathroom I believe is a splendid one and that could be fully taken care of by the Inspection Department. You may put all kinds of legislation on the statute books and unless it is enforced it is of no use whatever. I might cite as an instance the non-glare lens that is supposed to be used for automobiles. Now there are hundreds of glaring lenses going around the country; nobody pays any attention to that and yet it is against the law and it is just because nobody will enforce the Act. If we had more leglislation along this line who is going to enforce it? The central station people have dirt enough of their own to clean up without getting into more. It is not likely the Inspection Department would enforce it if it is curtailing their sphere at all; it looks as if it would be another problem on their hands.

Mr. R. H. Martindale (Sudbury): I think if there is any one room in the house in which a heater is desired it is in the ordinary bathroom and I think you will find in nine cases out of ten the heater is in the well established standard or a new standard which will eliminate the dangers of the grounded wire on the fixture itself. To remodel the wiring system of the country and of the houses as they are to-day it is a tremendous job, and to enforce legislation to cover all these details is another tremendous job, and to my mind the quickest way would be to build appliances to a higher standard so that people would have to pay the price. I think they would be willing to do it.

Mr. Don Carlos: In regard to the use of the heater in the bathroom, I fully agree with that. There are probably more electric heaters used in the bathroom than any other place, but those should not be portable. That is what I had in mind when I said it should be prohibited in the bathroom; they should be attached to the wall and the frame of the heater bathroom and the general public using heaters will certainly want to use them in that room. It seems to me the safest and quickest way of getting at this trouble is to build heaters to a standard, not to a price. With the well known and durable insulating materials which are available to-day, and by good substantial construction, it seems to me a heater or appliance can be so constructed that in ninety-nine cases out of a hundred that there can be no accident. To my mind the quickest and best way to get after that is to build these things to a certain permanently grounded. And as to the possibility when repairing the cord of not getting the two marked wires connected together, that should be taken care of, making that a criminal offense for anybody to make such a repair as that. It is a serious offence for a man to do a job of that kind and I think that the electrical industry is considerably behind in not having provided cords that have a marked conductor, because the telephone companies in the telephone industry have been doing that for a good many years.

Progress on the Queenston-Chippawa Power Development.

THROUGH the combined efforts of the entire staff, progress on the Queenston - Chippawa Development is being kept well up to the specified schedule and the work is rapidly taking on the appearance of a finished power development.

The Intake section, which is at the junction of the Welland and Niagara Rivers, is progressing satisfactorily. A section of the coffer dam has been completed and cribs have been placed in position at Hog Island. Some idea of the magnitude of this work may be had from Figure 1, which shows the sheet steel piling and the dredges operating for the purpose of deepening the channel.

Proceeding up the Welland River or Chippawa Creek, the work of excavation is being accomplished by a Lidgerwood Cableway, and is making satisfactory progress toward deepening the channel in this section. At the section where the Canal enters the Welland River the suction dredge *Cyclone* is operating. This dredge was recently obtained from the Toronto Harbor Commission, and is holding its own with a splendid degree of satisfaction beside the huge shovel dredges which are being used

Figure 1—Dredge Working at Canal Intake

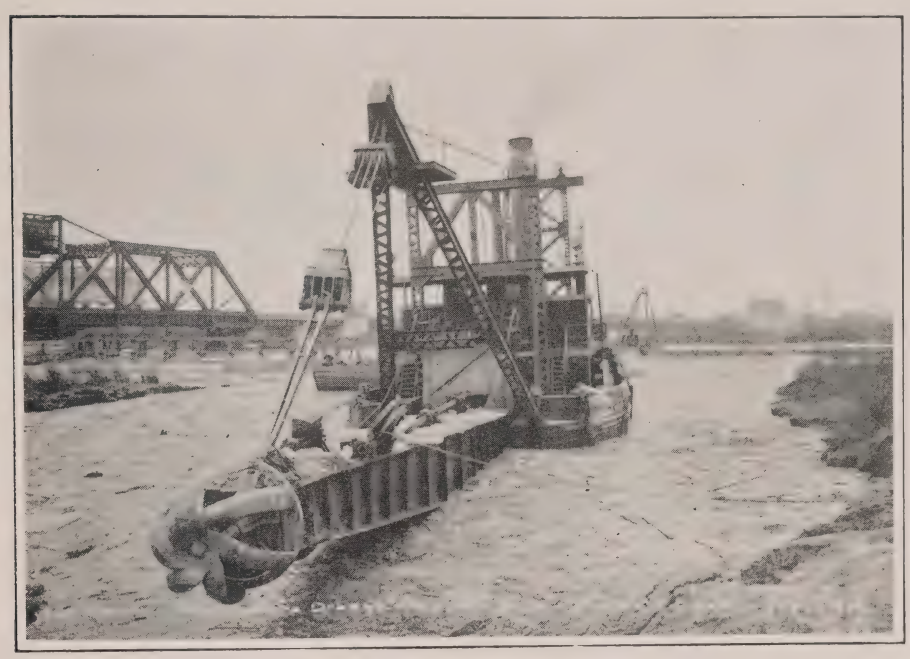


Figure 2—View of Dredge "Cyclone," showing Cutter Arm raised.

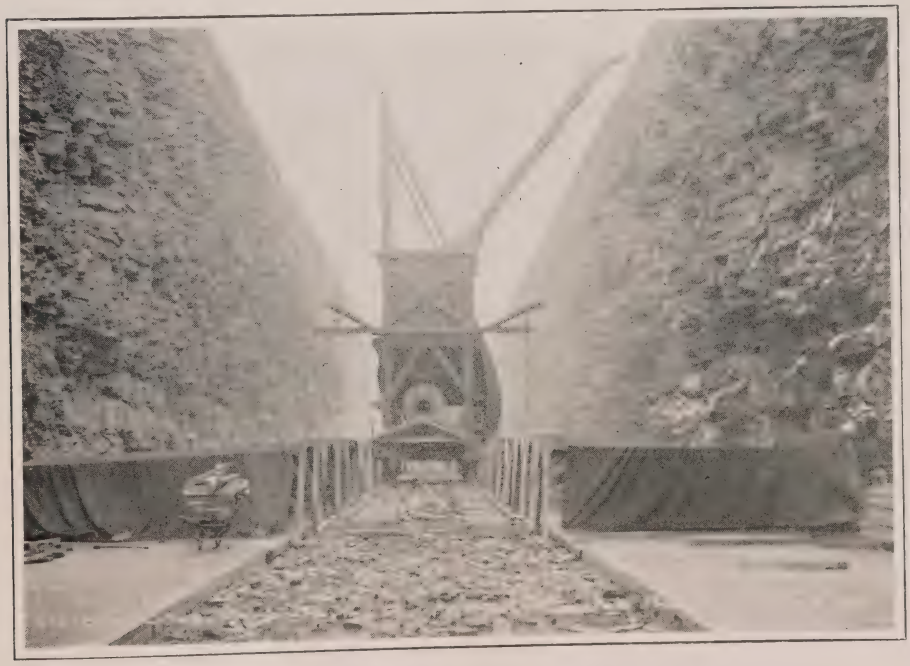


Figure 3—Concrete Plant Laying Floor in Rock Section of Canal

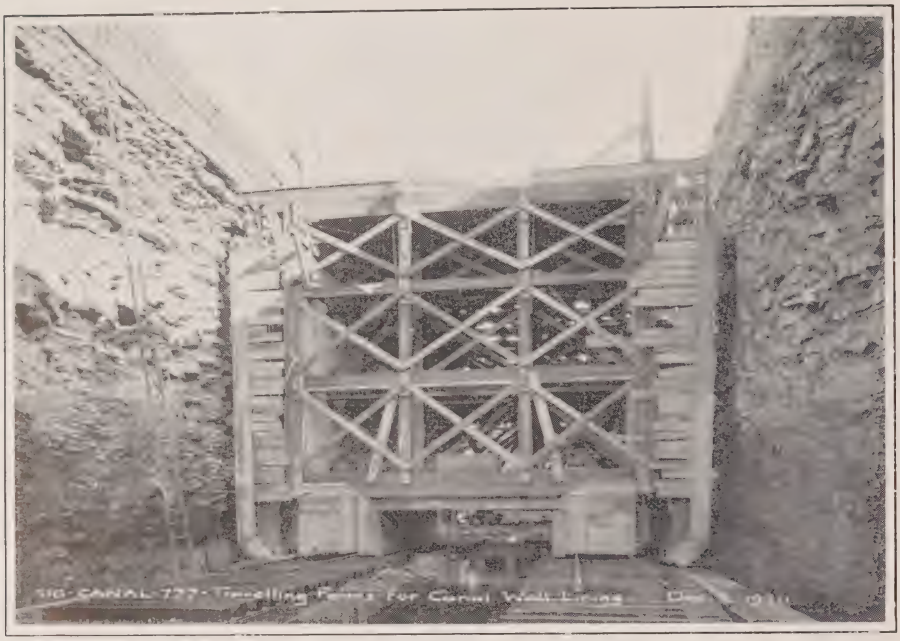


Figure 4—View Showing Travelling Forms for Canal Wall Lining

Figure 5—View showing Reinforcing Steel for Canal Lining, Whirlpool Section

for the purpose of excavating the Canal proper. Figure 2 shows this dredge in operation at Montrose. Some idea may be obtained as to its physical dimensions and also its ability to excavate clay and so forth by thec utter which is shown in the foreground of the photograph. The excellent showing this dredge has made has eliminated any doubt whatsoever as to the finishing of that particular part of the Canal on schedule time.

The work of the Rock Section is also proceeding with a great degree of satisfaction. At the present time a number of shovels are working on the section between Lundy's Lane and Montrose. The method in use is to operate on a series of benches or cuts resembling stair steps, with one shovel following the other, until the proper grade is obtained. This is the last great Rock Section to be excavated, and with the excellent progress being made, it should be finished well before schedule time.

In order to obtain the greatest flow of water passing through a canal it is necessary to have the sides and bottom made as smooth as possible to reduce the friction; this is accomplished by lining the Canal with concrete. Some idea as to the task of lining may be obtained from Figure 3, which shows one of the concrete mixers laying concrete in the bottom of the Canal. Figure 4 shows the steel forms set up for the purpose of lining the sides. Before this lining can be poured it is necessary to first remove all loose rock from the sides; this is done by a scaling gang, which precedes the

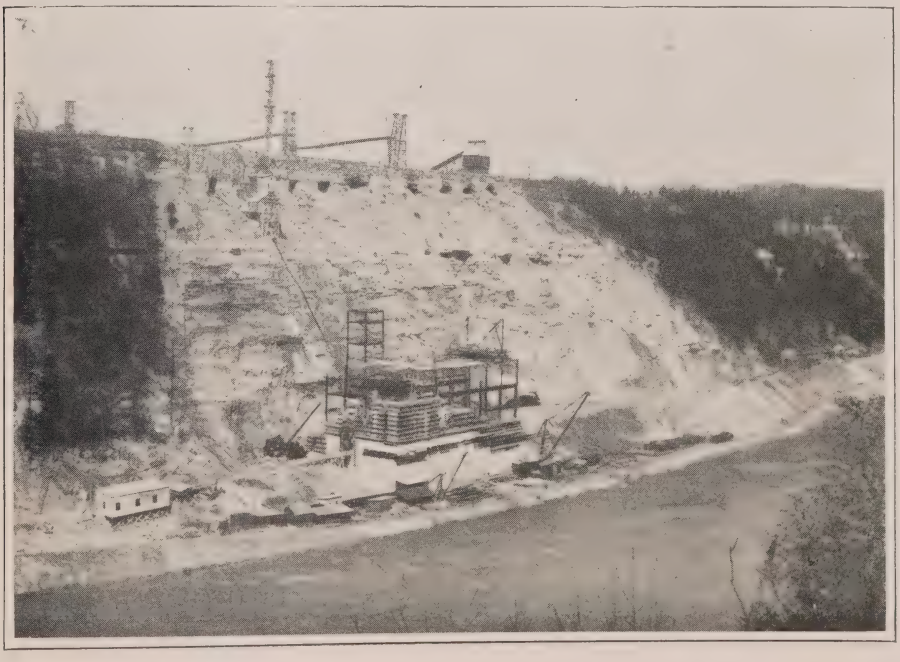


Figure 6—Scene Looking Across the Niagara River, showing Queenston Generating Station under construction

NOTE—*Holes at top of Cliff show location of Pipe Lines from Forebay*

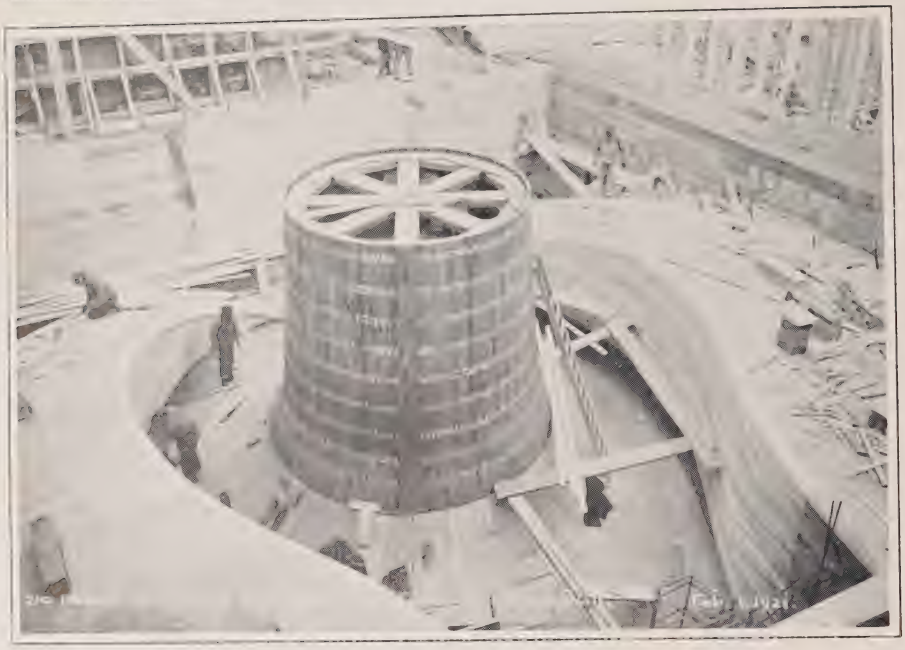


Figure 7—View showing Draft Tube Form

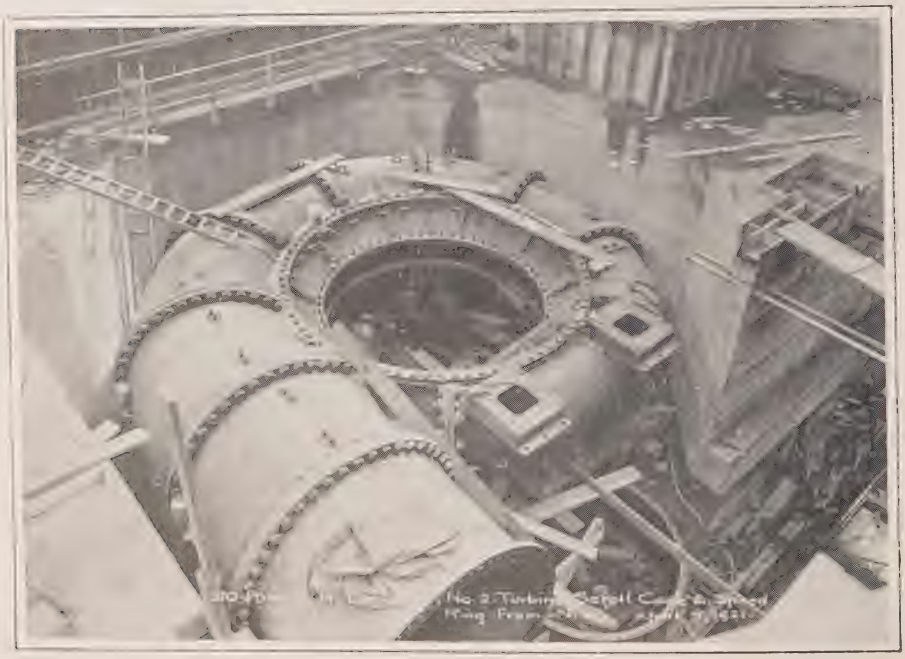


Figure 8—No. 2 Turbine Scroll Case being installed

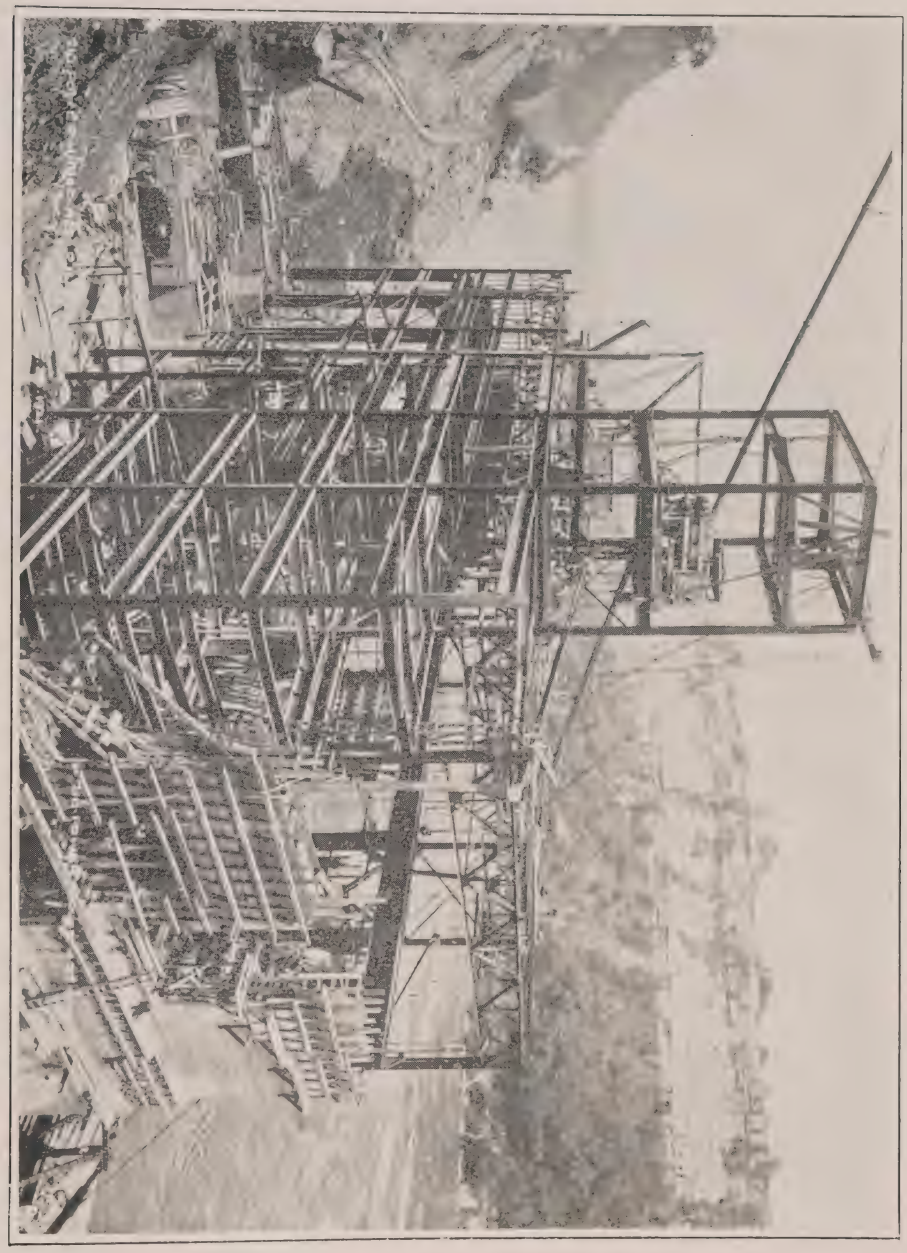


Figure 9—Looking down the river, showing Steel Work of Queenston Generating Station under construction

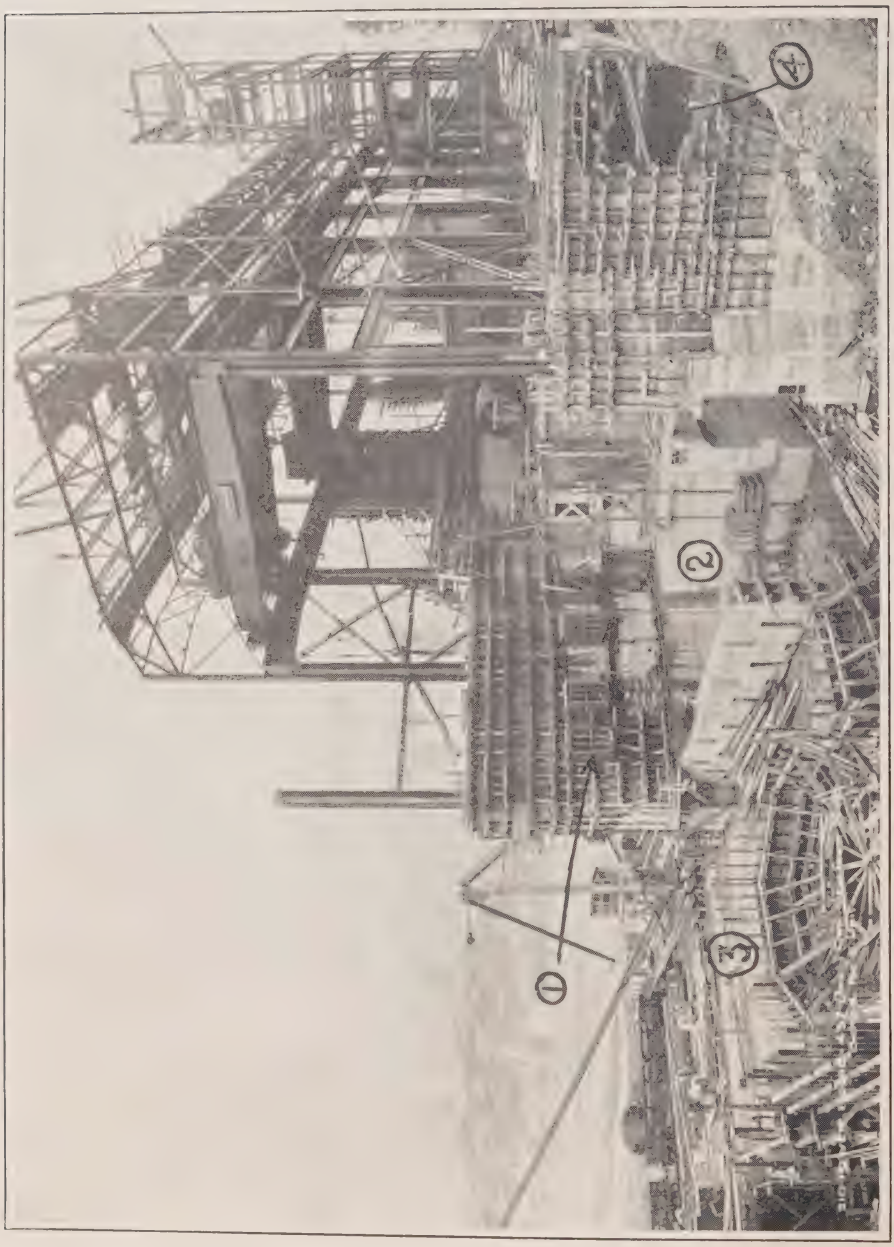


Figure 10—A view of the Queenston Generating Station under construction

lining operations. The photographs shown previously refer only to the Rock Section. Some idea, however, may be obtained from Figure 5 as to the nature of the lining used in the Earth Section, which crosses the Whirlpool Gulley. In this case the lining is placed at an angle and is reinforced by steel rods. Proceeding down the Canal the forebay is finally reached, where a different type of lining is used to that of the canal proper. The flow of the water in this section is reduced to a very small rate, and, therefore, it only becomes necessary to seal the rocks forming the sides. A lining is, therefore, being put on with a cement gun to a depth of a few inches.

Figure 6 shows the progress made on the power house up to May 6th. This view is taken from the American side and gives a comprehensive idea as to the work being done. On the sky-line may be seen towers supporting cables, concrete troughs and so forth. Most of these are used for the purpose of delivering concrete to the screen house and ice chute, as well as to the power house proper. On the escarpment face will be noted a series of holes a few feet from the top; these holes are the points where the pipe lines of penstocks will emerge on their downward passage to the power house. The Dominion Bridge Company has the contract to erect these and has its plant all installed at the present time, and is actively engaged on the installation. Slightly lower down on the picture may be seen the concrete mixing plant, which mixes all of the concrete used in the power house proper. Figure 7 shows

Figure 11—New Highway Lift Bridge at Chippawa

workmen erecting one of the draft tube forms. Immediately over this, as shown in Figure 8, one of the 55,000-horsepower turbines is installed. Some idea as to the magnitude of this machine may be obtained from the relative size of the workmen engaged on its installation. No. 1 turbine was installed previous to this and is practically complete.

In Figures 9 and 10 may be seen views of the progress being made on the power house building. In Figure 9 the construction railway, which brings in the material from the sorting yard located near Queenston, may be readily seen, as well as the American shore and Niagara River in the background. The building will be constructed in two main sections—the front section used for the generators and the rear for the transformers and switching equipment. The structural steel for the front section for Units No. 1 and 2 is practically all in place. The three panels shown in the foreground form part of the rear section, the centre one of which will be used for the elevator shaft. The top beams shown are at the roof elevation, which is, approximately, half way up the escarpment or 160 feet above mean river level. Referring again to Figure 10, some detailed views may be seen. Mounted near the top of the building the two 150-ton electrically operated cranes may be seen. These cranes are designed to operate as units or in conjunction with each other for the purpose of lifting weights up to 300 tons. In the lower foreground the progress may be seen with regard to the work on No. 4 Unit. On the wall of the river side of the building may be seen the air inlets for No. 3 generator. It will thus be seen that work on this structure is rapidly approaching a point where power will actually be delivered for use on the peoples' system.

As a matter of interest, Figure 11 is shown for the purpose of giving some idea as to the structures necessary on the Welland River for the purpose of maintaining vehicular traffic. This is one of the new Bascule Bridges erected at Chippawa and is located just a short distance from the intake.

The United States produces between 55 and 60 per cent. of the cotton crop of the world, approximately 30,000,000 bales annually. India ranks second as a cotton producer with 5,000,000 bales and Egypt is third, with about 1,250,000 bales. Great Britain claims supremacy in catton manufacture having about 56,000,000 spindles, while the United States has approximately 34,000,000. The value of cotton products manufactured in Europe totals $3,000,000,000 as compared with $1,000,000,000 in the United States.

About five-sixths of the world's present output of crude rubber now comes from the plantations of the Far East. Of this total output the British Colonies produce approximately 80 per cent., or nearly 68 per cent. of the total production of the world. the consumption of rubber throughout the world has increased nearly 400 per cent. in a decade.

Technical Section

The Testing of Gasoline.

By T. H. Chisholm,

Assistant Laboratory Engineer, Hydro-Electric Power Commission of Ontario.

SINCE the widespread adoption of motor vehicles for business and pleasure, gasoline has probably become the best known of petroleum products. Many familiar with the gasolines of fifteen years ago know that the gasolines of to-day are quite different from the gasolines of that time. Few know but in a general way what gasoline is, what affects its value as a motor fuel and what means are available for determining the quality of a gasoline and selecting the good from the bad.

Gasoline is a physical blend of many hydro-carbon compounds, all of which have a boiling point falling within a limited range of temperature. The quality of the gasoline and its efficiency as a motor fuel in the ordinary internal combustion engine depends largely on the temperature at which its constitutents volatilize.

The requirements of a gasoline from the user's viewpoint are: (1) The ease with which the engine starts. (2) The miles per gallon obtained from the fuel. (3) The carbon-free condition of the explosion chamber. (4) The freedom from gasoline contamination of the oil in the crank case.

The quality of a gasoline can be determined by a few laboratory tests and from these its performance as a motor fuel gauged. These tests are determined in the laboratory of the Hydro-Electric Power Commission. The more important ones will be described and interpreted.

When a sample of gasoline is to be tested, it is first well shaken and a portion poured into a glass tube and the color, suspended matter and odor noted, then it is set aside and later examined for the presence of water. Another portion is tested for sulphur or sulpho compounds. This is a very important test as what might appear good gasoline may contain sulpho compounds and when the gasoline explodes in the engine sufficient heat is generated to change the sulphur into the oxides which will combine with

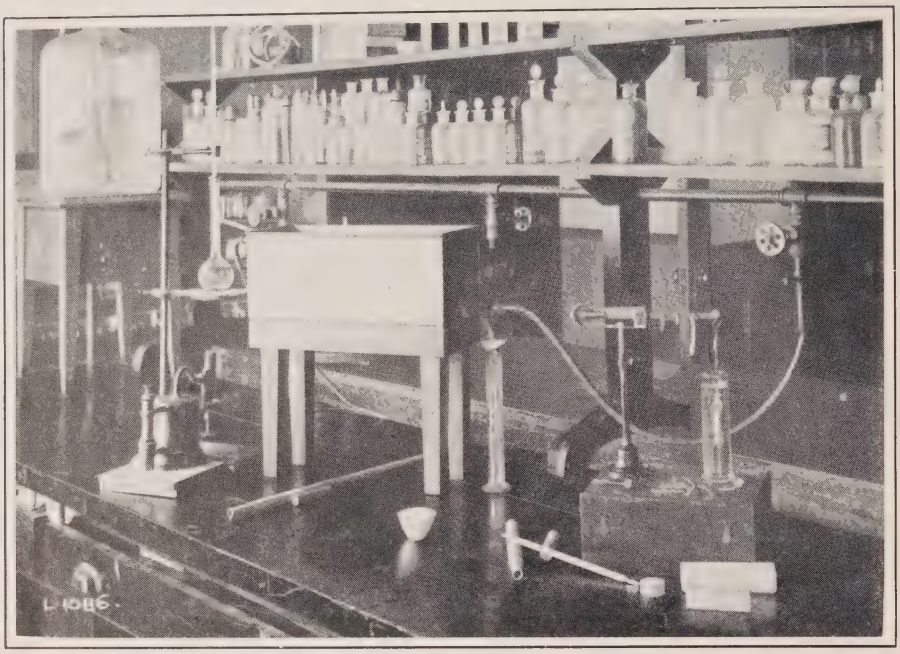


Figure 1

the moisture forming a sulphuric or sulphurous acid which readily causes pitting of cylinder walls. Free acids in the gasoline would have the same effect.

The most important test applied to gasolines is the distilling test. The distilling apparatus is shown in Figure 1. This test is a method of measuring the "light ends" or portions which change to gas at low temperature and act as kindling in starting the car, also the "heavy ends" which are the portions of the gasoline which are likely to mix with the lubricating oil or cause the carbon deposit on spark plugs.

Figure 2 shows the results of some distilling tests. It will be interesting to note that in this case Curve No. 1 which is a good grade of gasoline has an initial boiling point of 40°C and ten per cent. distilling at 65°C. (This is the portion which acts as the kindling in starting the engine). Ninety-eight per cent. distills at 165°C., showing practically no heavy portions to dilute the lubricating oil or partly burn forming a carbonous deposit around spark plugs and cylinder head. Curve No. 2 gives a good idea of the average present day gasoline. Although it has sufficient light ends or kindling it also has considerable heavy portions but should give satisfaction in service. Curve No. 4 is the results of a distilling test on kerosene and Curve No. 3 is a 50/50 blend of average gasoline and kerosene. These curves show very plainly how gasoline of desired volatility can be chosen.

There are also a number of other

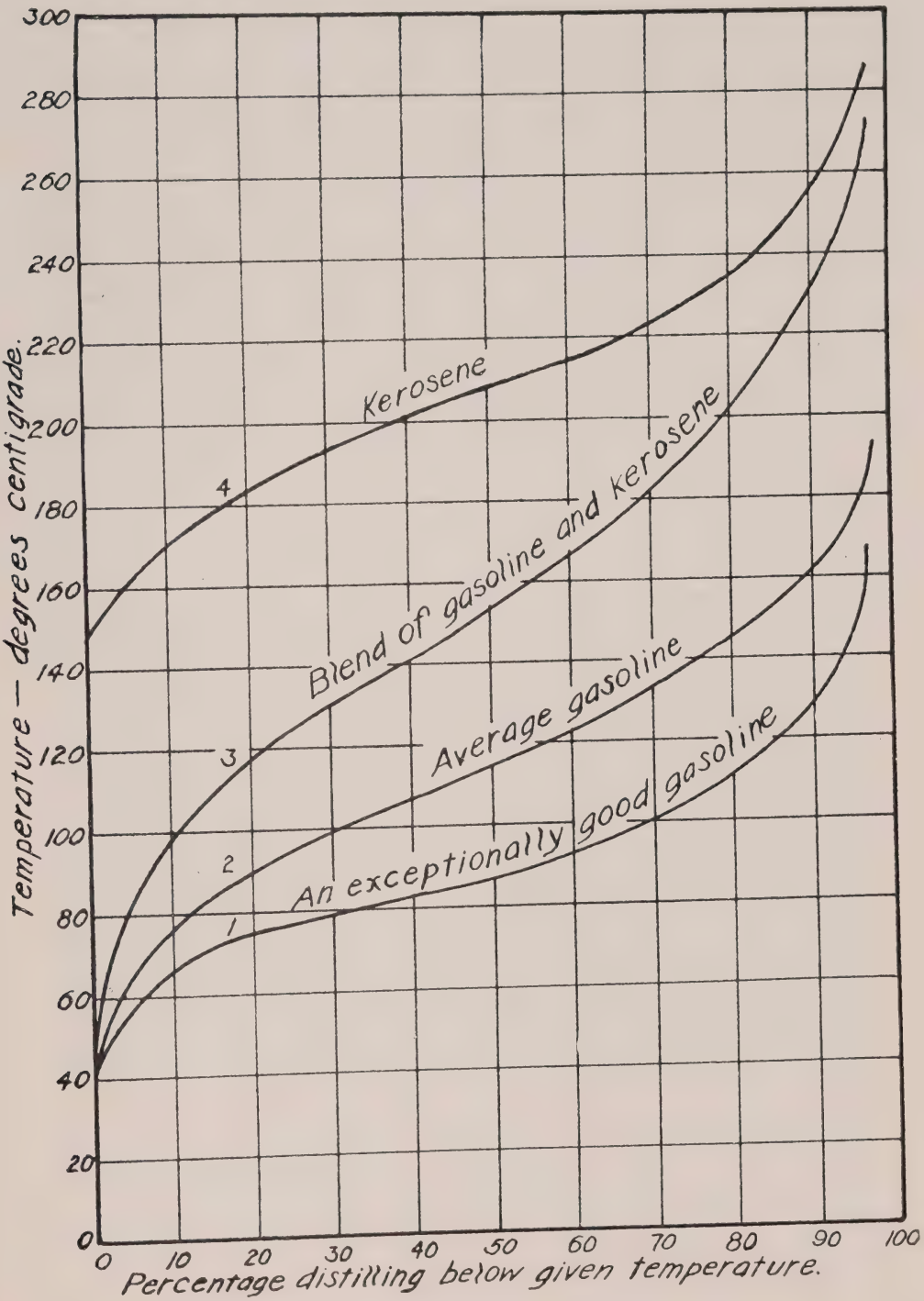

Temperature — degrees centigrade.
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
0
10
20
30
40
50
60
70
80
90
100
Percentage distilling below given temperature.
Kerosene
4
Blend of gasoline and kerosene
3
Average gasoline
2
An exceptionally good gasoline
1

Figure 2

tests which can be made on gasoline and have an important meaning to persons familiar with gasoline and gasoline testing, such as specific gravity, "doctor" test, unsaturated hydro-carbon test, sulphuric acid test, etc.

Specifications for a gasoline which we have found satisfactory for general purposes are as follows: The gasoline shall be water white in color, reasonably free from rancid odor, olafine and unsaturated compounds and absolutely free from water, suspended matter, acids and sulphur. In the volatility test the first drop must distill between 35 and 40°C., not over 10 per cent. shall distill at 60°C. or less than 20 per cent. at 100°C., 50 per cent. shall distill under 140°C. and not less than 90 per cent shall distill at 185. The end point and dry point must be under 210°C.

The followers of Mahomet believe that on the last day of all, artists and sculptors will be called upon to give souls to the bodies they have painted or modelled. If they fail, they will suffer for trying to imitate the Creator.

Static electric sparks, resulting from friction of the folds of a silk dress being cleaned in gasoline, caused a fire in a cleaning establishment in Bend, Oregon.

This view of the show window of the Toronto Hydro Shop illustrates the value of a window demonstration

The Parry Sound Wash-Out.

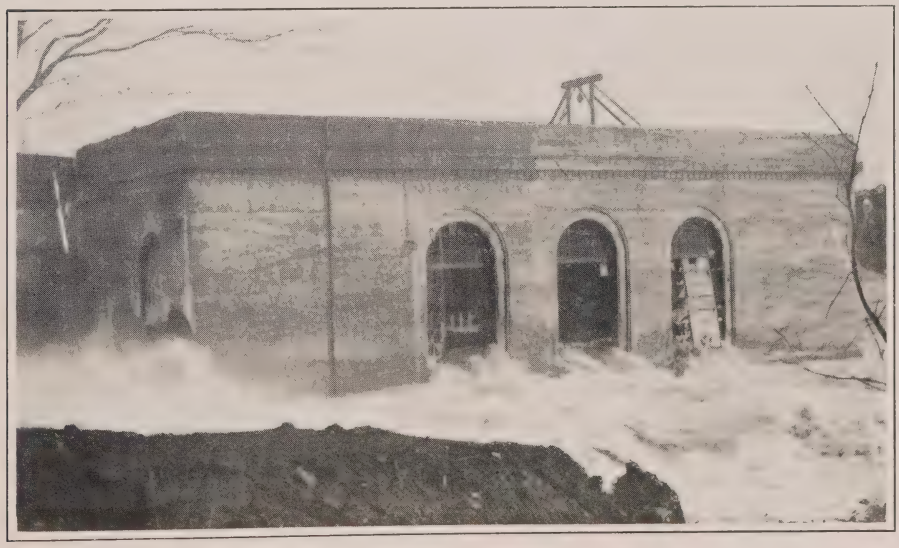
By T. C. James

Assistant Engineer, Hydro-Electric Power Commission of Ontario

ON March 21st a disastrous wash-out occurred at the Municipal Generation Station at Parry Sound resulting in considerable damags to the power house equipment and causing an interruption to service for thirty consecutive days. The accompanying illustrations give a graphic representation of the magnitude of this accident and the difficulties encountered in effecting repairs and placing the equipment in operating condition again.

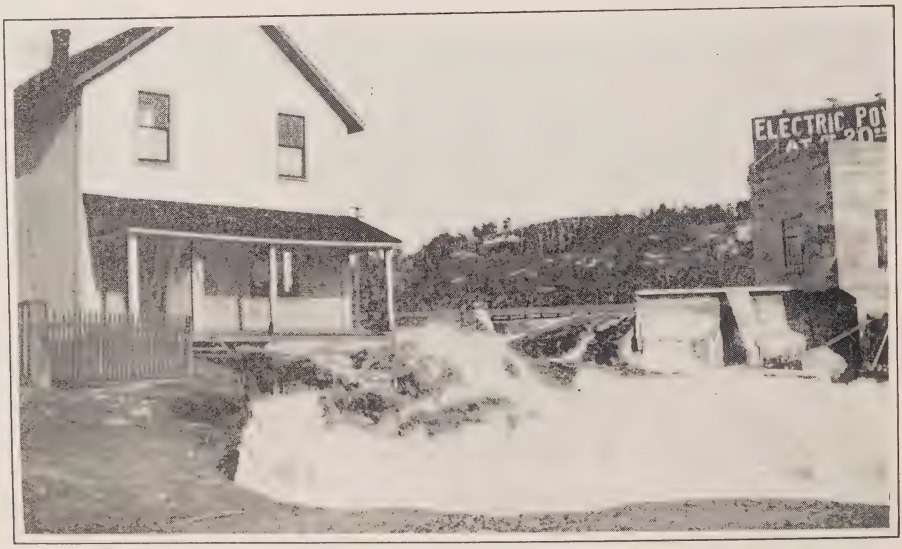
The plant consists of two direct-driven units, one being an "Allis-Chalmers Bullock" 425-kva. generator, 60-cycle, 2,200-volt, 200-r.p.m. and the other a "Canadian Westinghouse" 750-kva. generator, 60-cycle, 2,200-volt, 257-r.p.m. both driven by wheels of the open flume, single and double runner type. The exciters consisted of two units, one a 15-kw, 110-volt, D.C. machine, direct driven by a water wheel, the other being a 40-k.w., 135-volt machine driven by a 62 horsepower Canadian Westinghouse squirrel cage 2,200-volt motor.

The plant is located inside the town limits on the Sequin River, and had only been in operation about one year prior to the accident. The dam itself, the flume and power house were all of concrete construction and the break occurred at the junction of the wing wall with the main dam. The extreme



A close-up view of the Power House during the Flood. Note the water pouring in through the door and out of the windows

A view showing the Power House partially submerged



A view of the break in the Wing Wall of the Dam, showing the portion destroyed

A close-up view of the break in the Wing Wall of the Dam, Parry Sound Municipal Power Plant. The building on the right is the Gate House

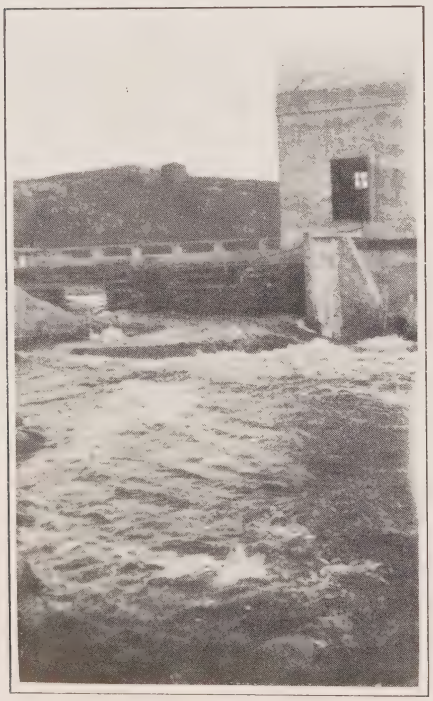
A view showing the preparations being made for constructing the Trestle for transporting Temporary Equipment to the Power House

warm weather during the end of March resulted in a heavy freshet on account of the melting snows in the upper reaches of the river and the dam proved inadequate to withstand the pressure of the abnormal quantity of water passing down the stream and about 25 feet of the wing wall gave out, thus precipitating almost the entire flow of the swollen stream directly on the power house building.

At the request of the Town Council the Hydro-Electric Power Commission of Ontario undertook to effect repairs and restore service. As soon as the water had subsided sufficiently to make an examination of the equipment, it was found that the 450-kva. machine was a complete wreck as it was under load when the water broke through the power house doors and windows, the operators not having sufficient time to close the gates or open the switches before effecting their escape from the building. The stator winding was totally destroyed, the laminations were fused, the field coils totally destroyed and two legs of the rotor spider were cracked through. The 750-kva. generator was not operating at the time of the flood and all that was required to place this machine in service again was a thorough drying out.

The armature of the exciter which

The Timber Trestle to the Power House under construction



A view showing the break in the Dam and the construction of the crib coffer dam

was in service when the flood occurred was damaged beyond repair and was replaced, the other exciter unit requiring drying out only, but the auto transformer for the motor end of the motor-generator set was damaged to such an extent that a new one was required.

It was also found necessary to forward the three constant-current street lighting regulators to the factory for a complete overhauling before they could be utilized again.

The metering equipment on the switchboard required a thorough overhauling as some of the instruments were under water for a period of two weeks; this work was performed by the Hydro-Electric Power Cimmission's Laboratories at Toronto.

The first step taken to effect repairs was the construction of a crib coffer dam across the break in the wing wall of the main dam to check the flow of water through the power house. This work was begun on March 28th.

and completed on April 23rd, occupying a period of twenty-seven days. The completion of this coffer dam was also necessary in order that the break in the concrete wing wall of the main dam could be replaced. The work of replacing this damaged section is now going on, and a much more substantial structure than the original is being constructed. Furthermore, to guard against similar accidents in future, two sluice ways are being cut in the main dam to take care of future conditions so that the abnormal quantities of water during flood periods may be discharged over the dam and thus relieve the pressure on the wing wall. As the drying out and overhauling of the electric equipment required considerable time, a 250-kva., 60-cycle, 2,200-volt generator was rented from the Town of Carle-

Transporting Equipment to the Power House by an Aerial Cableway

Transporting Temporary Generator across the Trestle to the Power House

ton Place and temporarily installed by belting to one of the main turbines.

As the power house was completely cut off from its only accessible side by the water passing through the break in the dam—a stream 50 feet in width—it was found necessary to construct a timber trestle across this gap. An aerial cableway was first erected and anchored to the power house wall and used for placing the timber and crib work in position. The temporary

The Timber Trestle completed

generator and other equipment was then transported across to the power house and erected. The trestle was completed on April 17th, the generator hauled across to the power house on the 18th, and placed in operation on the 19th.

The street lighting service was resumed by placing a number of lamps in series across one phase of the 2,200-volt circuit and by watching the regulation closely at the power house this means has proved satisfactory, and will enable the municipality to give temporary street lighting until such time as the regulators can be repaired and replaced.

The drying out of the motor generator exciter set was completed and the machine restored to service on May 15th. The drying out of the 750-kva. generator was completed and the machine placed in operation on May 22d, the time occupied in making this machine ready for service being twenty days.

Operating Department Picnic.

The Operating Department Staff of the Ontario Hydro Commission held a most successful picnic on Saturday afternoon, June 18th, on the Commission's property in Erindale Village. The grounds, where games and races were held, afford a picturesque view of the Credit River and surrounding country. About one hundred and fifty people, including employees with their wives and families, from Toronto, Hamilton, Cooksville and Dundas, were in attendance.

An interesting game of Indoor Baseball between the Operating Department and the Operating Meter Department resulted in a win for the Meter men with D. A. McKenzie as Captain. In a game between the winners and Hamilton Office, the Meter men again took the honors. An interesting ladies' games was also played which resulted in a win for the Hamilton ladies over Toronto with a score of 9-6. In a Tug-of-War between Hamilton and Toronto, Mr. H. J. Muehleman as captain for Hamilton beat Toronto with Mr. H. C. Don Carlos as Captain.

In the races, which took place just before serving supper, Miss Virginia Don Carlos and Miss Helen Ewart won first and second prizes in the girl's race and George Osborne and Harry Richardson in the boy's race. Miss Grimble and Miss Grayston were the winners in the single ladies' race over a large number of contestants. Mr. D. A. McKenzie and H. K. McLean won first and second quite handily over the rest of the single men and Mr. L. G. Dandeno had lots to spare when he won first prize from the rest of the married men. The first prize in the married ladies' race was carried off by Mrs. Wells. Miss E. Anderson in the potato race proved she could carry a large potato on a very small spoon and run faster than the other ladies. Miss Rooney with Mr. L. G. Dandeno as partner won the thread and needle race. In the men's three legged race Mr. D. A. McKenzie and Mr. L. G. Dandeno added another first prize to the rest of their winnings.

A bountiful supper was daintily served on tables on the lawn of an adjacent cottage and much credit and thanks are due Mrs. H. C. Don Carlos and Mrs. H. J. Muehleman in helping to make this end of the picnic a huge success. Miss B. Ralph of Hamilton and Miss E. Hammond of Toronto were also on the supper committee.

Mr. W. Dowds and Mr. D. Martin in arranging for transportation, grounds, prizes and games, deserve a great deal of credit for the success of the whole picnic. Mr. H. Woodall of Erindale Power House was also a hard worker. Mr. W. G. Lawson arranged the necessary details for the Hamilton and Dundas party. Mr. J. C. Wills of Toronto was also on the committee.

The world's paper money circulation at the commencement of the war totalled $7,527,000,000, while at the end of last year the paper money amounted to $81,596,000,000. This does not include $34,000,000,000 Bolshevik currency

Bowling League Banquet.

The bowling season of 1920-1921 for the Hydro-Electric Power Commission Bowling League was very fittingly brought to a close at the annual meeting and banquet held in the Crystal Room of the Hotel Mossop on May 5th. About one hundred members were present and a most enjoyable evening was spent. The president, Mr. A. G. Lang, occupied the chair and kept things moving so that there was not a dull moment during the evening Towards the close of the dinner, Messrs Butler and Ewart played several popular songs in which everyone joined.

Mr. W. W. Pope, who has not missed a bowling dinner since the inception of the league, represented the Commission, and made his customary humorous speech. He also presented the retiring secretary, Mr. J. P. Morgan, with a token of appreciation from the bowlers in the form of a handsome electric coffee percolator, greatly to the surprise of the said secretary.

The regular business meeting was then held and after the various reports had been received showing the season just closed to be the most successful yet, the annual elections were held at which the following members were elected by acclamation: J. P. Morgan, President; A. R. Rice, vice-president; R. M. Thompson, secretary; G. O. Vogan, treasurer; W. Turpin, committee.

Following the elections the Hydro Musical Society put on a most enjoyable entertainment.

Mr. Jack Robinson gave a great impersonation of a negro bowler from "dear ole Alabam" on the saxophone. Mr. E. Stenhouse rendered two tenor solos which were greatly appreciated. Mr. Ewart, on the violin, scored a decided hit and Mr. Dave Martin sang two comedy songs which had the audience convulsed with laughter. However, the Hydro Male Quartette consisting of Messrs. Diblee, Stenhouse, Pickles and Mickler, surprised everyone with the talent displayed and were easily the best feature of a very high class entertainment which augurs well for the future success of the Hydro Musical Society.

The spirit developed at the meeting was splendid and we hope for many affairs of a similar nature.

A. M. E. U.

The Secretary desires all Members who have not returned their badge brooches to kindly do so, as these will be used again at future conventions.

S. R. A. CLEMENT,
Secretary.

The Electrical Alphabet.

A

Is for all the electrical things
That the modern St. Nick to the good housewife brings.

B

Is the button you press at your will.
It does all the work while the owner sits still.

C

Is for electrical curlers that twist
The straightest of locks into curls that persist.

D

Is the dishwasher—why have a maid?
You can buy a house with the wages you paid.

E

Is electric—the new fangled way
To do in an hour what took you a day.

F

Is the fan with electrical breeze
That cools off the air at your afternoon teas.

G

Stands for grill that broils beefsteak and chops,
And warms up the soup when the temperature drops.

H

Is for home—it's electric, of course;
Of comfort and tidiness always a source.

I

Is for irons that smooth out the wash
Without any trips to the fire, by gosh!

J

Is the junk that we've now done away with,
And bought us electric devices to play with.

K

Is the kitchen, so modern and tidy,
You get all your Saturday work done on Friday.

L

Is the labor that's saved by devices
That housewives can purchase at modern prices.

M

Is the motor that does all the work,
It strikes for no wages and never will shirk.

N

Is for nothing left under the sun
That's not by the method electrical done.

O

Is the obsolete old-fashioned broom
That scatters the floor dust all over the room.

P

Is the pad that the cold-footed seek,
It never grows cold and it cannot well leak.

Q

Is the question of getting a maid,
With electrical comforts, what housewife's afraid?

R

Is for ranges—electric, you've guessed;
You press the button the clock does the rest.

S

Is for socket, convenient at hand—
For irons and vacuum cleaners they are grand.

T

Is the toaster with which one is able
To make toast that's tasty while still at the table.

U

Is the useful electrical gift
Full half of humanity's burdens they lift.

V

Is the tireless vacuum cleaner
Which makes life less dusty and surely serener.

W

Stands for the washing machine
It causes no aches and it washes things clean.

Y

Is the youth that the housewife retains
While saving her footsteps while using her brains.

Z

Is the zest that a good husband feels
When he has both his waffles and wife at his meals.

—Journal of Electricity.

There are 2,250,000 miles of highways in the United States.

Ten years ago there were only 500,000 automobiles in the United States; five years later there were about 3,000,000; by the end of the present year the number of motor vehicles will have reached 10,000,000.

The U. S. Bureau of Mines estimates that 425,000,000,000 cubic feet of natural gas have been allowed to escape in the United States without any use having been made of it.

The aggregate new premiums of all fire insurance companies reporting to the Insurance Department at Ottawa in 1920 reached $50,565,856, being an increase of more than $10,000,000 over the previous year's total of $40,031,474.

HYDRO MUNICIPALITIES

NIAGARA SYSTEM

	Pop.
Acton	1,563
Ailsa Craig	486
Ancaster	400
Ancaster Twp.	4,058
Aylmer	2,247
Ayr	802
Baden	710
Barton Twp.	6,382
Beachville	503
Biddulph Twp.	1,623
Blenheim	1,490
Bolton	587
Bothwell	680
Brampton	4,270
Brantford	32,159
Brantford Twp.	6,741
Breslau	500
Brigden	400
Burford	700
Burford Twp.	3,778
Burgessville	300
Caledonia	1,265
Chatham	15,182
Chippawa	1,172
Clinton	1,809
Comber	800
Copetown	230
Dashwood	350
Delaware	350
Dereham Twp.	3,200
Dorcester	400
Dorchester S. Twp.	1,376
Drayton	600
Dresden	1,411
Drumbo	375
Dublin	218
Dundas	5,009
Dunnville	3,517
Dutton	860
Elmira	2,392
Elora	1,205
Embro	437
Etobicoke Twp.	7,281
Exeter	1,445
Fergus	1,710
Flamboro E. Twp.	2,499
Forest	1,422
Galt	12,434
Georgetown	2,121
Glencoe	824
Goderich	4,220
Grantham Twp.	3,456
Granton	300
Guelph	17,032
Hagersville	1,072
Hamilton	114,766
Harriston	1,340
Hensall	721
Hespeler	3,000
Highgate	371
Ingersoll	5,385
Kitchener	21,056
Lambeth	350
Listowel	2,551
London	59,100
London Twp.	6,073
Louth Twp.	2,312
Lucan	620
Lynden	622
Markham	836
Merritton	2,553
Milton	1,800
Milverton	1,044
Mimico	2,887
Mitchell	1,656
Moorefield	335
Mount Brydges	500
New Hamburg	1,370
New Toronto	2,696
Niagara Falls	14,207
Niagara-on-the-Lake	1,918
Norwich	1,271
Norwich N. Twp.	1,879
Norwich S. Twp.	1,888
Oil Springs	473
Otterville	400
Palmertson	1,890
Paris	4,320
Parkhill	1,213
Petrolia	2,863
Plattsville	500
Point Edward	1,037
Port Colborne	3,235
Port Credit	878
Port Dalhousie	1,447
Port Stanley	717
Preston	5,184
Princeton	600
Ridgetown	2,150
Rockwood	520
Rodney	686
Sandwich	3,643
Sarnia	12,649
Scarborough Twp.	7,843
Seaforth	2,015
Simcoe	3,756
Springfield	420
St. Catharines	19,195
St. George	600
St. Jacobs	400
St. Mary's	3,886
St. Thomas	17,759
Stamford Twp.	4,000
Stratford	18,106
Strathroy	2,637
Streetsville	525
Tavistock	876
Thamesford	388
Thamesville	804
Thorndale	250
Tilbury	1,619
Tillsonburg	2,856
Toronto	499,278
Toronto Twp.	5,234
Townsend Twp.	2,988
Vaughan Twp.	4,184
Walkerville	6,279
Wallaceburg	4,067
Waterdown	791
Waterford	1,084
Waterloo	5,476
Waterloo Twp.	6,475
Watford	1,033
Welland	9,135
West Lorne	787
Wellesley	583
Weston	2,570
Windsor	31,629
Woodbridge	587
Woodstock	10,126
Wyoming	503
York Twp.	44,232
Zurich	457
Total	**1,191,736**

SEVERN SYSTEM

	Pop.
Alliston	1,264
Barrie	6,775
Beeton	571
Bradford	885
Camp Borden	.....
Coldwater	595
Collingwood	7,262
Cookstown	635
Creemore	612
Elmvale	600
Midland	6,532
Orillia	7,854
Penetang	3,811
Port McNicoll	531
Stayner	915
Thornton	200
Tottenham	469
Victoria Harbor	1,441
Waubaushene	600
Total	**41,552**

WASDELL'S SYSTEM

	Pop.
Beaverton	949
Brechin	225
Brock Twp.	2,795
Cannington	838
Eldon Twp.	2,047
Gamebridge	70
Kirkfield	138
Mara Twp.	2,000
Sunderland	570
Thorah Twp.	1,084
Woodville	434
Total	**11,150**

NIPISSING SYSTEM

	Pop.
Callander	650
Nipissing	100
North Bay	10,163
Powassan	510
Total	**11,423**

MUSKOKA SYSTEM

	Pop.
Gravenhurst	1,437
Huntsville	2,160
Total	**3,597**

EUGENIA SYSTEM

	Pop.
Alton	450
Artemesia Twp.	2,367
Arthur	1,172
Chatsworth	303
Chesley	1,741
Derby Twp.	1,507
Dundalk	700
Durham	1,520
Elmwood	350
Flesherton	410
Grand Valley	582
Hanover	2,724
Holstein	285
Horning's Mills	350
Kilsyth	.....
Kincardine	1,992
Lucknow	902
Markdale	869
Mount Forest	1,838
Neustadt	430
Orangeville	2,186
Owen Sound	12,218
Priceville	.....
Ripley	.....
Shelburne	1,063
Tara	520
Teeswater	852
Wingham	2,240
Total	**39,571**

OTTAWA SYSTEM

	Pop.
Ottawa	107,732

THUNDER BAY SYSTEM

	Pop.
Port Arthur	15,094

CENTRAL ONTARIO SYSTEM

	Pop.
Belleville	12,240
Bloomfield	600
Bowmanville	3,250
Brighton	1,376
Camden East Twp.	3,050
Cobourg	4,874
Colborne	869
Darlington Twp.	3,407
Deloro	259
Deseronto	2,017
Havelock	1,220
Kingston	23,261
Lakefield	1,133
Lindsay	7,841
Madoc	1,056
Marmora	856
Millbrook	740
Napanee	2,863
Newcastle	553
Newburgh	434
Norwood	698
Omemee	517
Orono	700
Oshawa	10,126
Peterborough	21,230
Pickering Twp.	4,382
Picton	3,165
Port Hope	4,394
Richmond Twp.	1,944
Seymour Twp.	2,506
Stirling	849
Trenton	5,736
Tweed	1,288
Wellington	853
Whitby	3,102
Whitby Twp.	1,734
Whitby E. Twp.	3,420
Total	**134,552**

ST. LAWRENCE SYSTEM

	Pop.
Alexandria	2,260
Apple Hill	.....
Brockville	9,326
Chesterville	949
Lancaster	593
Martintown	.....
Maxville	753
Prescott	2,774
Williamsburg	200
Winchester	1,019
Winchester Springs	.....
Total	**15,660**

RIDEAU SYSTEM

	Pop.
Carleton Place	3,786
Kemptville	1,179
Lanark	583
Perth	4,047
Smith's Falls	6,665
Total	**16,260**

ESSEX COUNTY SYSTEM

	Pop.
Amherstburg	2,170
Canard River	50
Cottam	333
Essex	1,753
Harrow	619
Kingsville	1,732
Leamington	4,360
Total	**11,017**

THOROLD SYSTEM

	Pop.
Thorold	5,012

THE aim of The Bulletin is to provide municipalities with a source of information regarding the activities of the Commission; to provide a medium through which matters of common interest may be discussed, and to promote a spirit of co-operation between Hydro Municipalities.